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ELEMENTS

OF

PATHOLOGY,

AND

PRACTICE OF PHYSIC.

BY

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&c. &c. &c.

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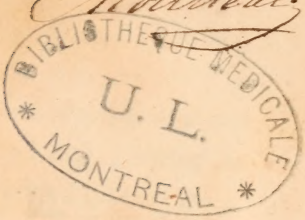

TO THE RIGHT HONOURABLE

LORD VISCOUNT BERESFORD, G.C.B.

MASTER GENERAL OF THE ORDNANCE,

&c. &c. &c.

THIS VOLUME

IS RESPECTFULLY DEDICATED.

1661 - Left by Dr. Bernard Millikin

PREFACE.

THE chief object of the following work, is to furnish those gentlemen who do the author the honour of attending his lectures, with a text-book.

When he began to arrange the plan of his Course of Lectures, he wished to avoid even the appearance of interfering with a system followed by the teachers in this University, and other Schools of Medicine, and therefore adopted Cullen's classification, but with an intention of printing a new edition of his "Outlines of the Practice of Physic," with copious notes, to bring up the work to the present improved state of pathology. He was soon, however, obliged to relinquish this plan, by finding that the necessary additions would far exceed the size of the original; and because, upon further consideration, it appeared to be absurd to reprint such a mass of error, and to follow such an unpathological system of physic, in the present state of science.

In commencing this work, it was the author's intention to give only a short outline of his Course of Lectures; but he was subsequently induced to write more fully under the title, "Elements of Pathology,

and the Practice of Physic." The Work will consist of Two Volumes, and it is with great reluctance that one is sent forth several months before the other can be completed; but having so long promised a Text-Book to his pupils, he is unwilling altogether to disappoint them. The present volume has been composed and printed in a very short period of time, amidst the numerous and unavoidable interruptions occasioned by the author's other avocations, and he is now grieved to find, that many errors and inaccuracies have crept in, which would otherwise have been corrected.

The style in which the Work is written, is at least unpretending, the author's only object being to make himself understood by those for whose use the Work is chiefly intended; and as, during each Course of Lectures, every subject will be followed out to the most complete elucidation which the author's time and talents permit, he is not without hope that the Work will be found useful to his pupils in their studies. The author also trusts, that with all its faults and imperfections, the Work will be indulgently received by the Profession, as a humble attempt to establish a pathological system of medicine. He may perhaps be accused of want of sufficient veneration for the opinions of many most distinguished authors, and of not being sufficiently guarded in his expressions;—the author's only aim has been to advance science, and to benefit his species.

31. Albany Street,
4th November 1828.

ERRATA.

Page 75. Line 22. for *second* read *first*.
—— 120. —— 17. for *laughable* read *lamentable*.
—— 120. —— 32. for *is followed* read *are followed*.
—— 122. —— 25. for *there is* read *there are*.
—— 195. —— 15. for *scybbalous* read *scybalous*.
—— 234. —— 11. for *by the pus* read *feces*.
—— 234. —— 13. for *intestine* read *intense*.
—— 253. —— 8. for *arms* read *anus*.
—— 271. —— 10. for *tinged* read *turgid*.

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PART I.

PATHOLOGICAL HISTORY OF INFLAMMATION AND FEVER,—ALSO THE PATHOLOGY AND TREATMENT OF INDIVIDUAL FEVERS.

CHAP. I.

DOCTRINES, CAUSES, PHENOMENA, AND EFFECTS OF INFLAMMATION.

SECTION I.

General Doctrines which have prevailed respecting Inflammation.

Inflammation is a daily occurrence. A vast range of diseases owe their origin to this cause, and many acquire it in their progress. Fever and Inflammation are, according to some, synonymous terms. Therefore the subject is of much importance to the physician as well as the surgeon, and is worthy of a larger space than can be spared in a work like the present. It has, however, engaged the attention of many distinguished pathologists, the results of whose labours are before the profession. The master mind of the celebrated John Hunter first threw light upon this subject, which he found involved in darkness. His work on Inflammation must still be regarded as the standard which is to be appealed to and followed. But it may be here remarked, that in considering this question, physicians have been led to draw too largely upon surgical pathology, in attributing to internal Inflammations all the phenomena and characters of those situated in external parts; and therefore it will be much insisted on in the course of this work, that the most deadly Inflammation of important organs may go on, some with few, others with none of the symptoms universally attributed to Inflammation.

In giving a history of the doctrines which have prevailed, it would be a waste of time to quote the opinions which were

maintained previous to the time of Boerhaave, because they were inconsistent with the knowledge we now possess of the circulation of the blood. Boerhaave insisted that Inflammation was produced by an obstruction to the free circulation in the capillary vessels. This obstruction, he conceived, might be produced by too profuse a flow of any of the excretions, and by heat, or the application of any other cause which could dissipate the thinner parts of the blood, producing viscidity. When this thickened state of the blood did not exist before the production of Inflammation, he imagined that the larger globules of the blood got by some accident into the capillaries, producing obstruction. But when the perspiration, the flow of urine, or any of the other excretions were suppressed, then he supposed the capillaries became so much distended, as to allow the thicker parts of the blood to enter, and thus a more permanent obstruction was produced; and this state he termed an *error loci*. Thus, it will be seen that Boerhaave had two causes of Inflammation,—viscidity of the blood, and an *error loci*, either of which he supposed capable of producing an obstruction in the circulation of a part, causing an increase of action in the heart and other vessels, and exciting a flow of blood in the direction where the obstruction existed. He, however, felt the necessity of having the assistance of some other cause, to enable him to account more satisfactorily for the disagreeable terminations which sometimes happened, and therefore brought into play the humoural pathology, by stating that there is sometimes an acrimonious state of the fluids, which tends to produce gangrene. That part of his doctrine relating to viscidity, cannot altogether support the phenomena, being more likely to produce a general than a local effect, since the whole mass of blood must be supposed to be in the same state. But there is rather more probability in the *error loci;* for it is a fact, that in many inflamed parts, red blood does enter into vessels, which, in a state of health, circulate a colourless fluid; but here there is some difficulty in determining whether or not the *error loci* is an effect, and not a cause of Inflammation. And there is still greater difficulty in the subject, when we reflect, that vessels frequently circulate red particles, which usually contain

a colourless fluid, and yet inflammation has neither preceded, attended, nor followed this remarkable change. With respect to the aid which this author hoped to derive from the humoural pathology, it must be confessed that we have abandoned this view, which is far more ancient than the time of Boerhaave, without sufficient consideration. On looking at the history of medical opinions on this subject, we shall observe, that, as the humoural pathology declined, Boerhaave's doctrines began also to lose ground, although the phenomena of Inflammation were, in many cases, ingeniously explained by their assistance.

Stahl and Hoffman so far improved these doctrines, by bringing into account the influence of the nervous system on the capillary vessels in Inflammation. On this occasion, little more need be said respecting the views of these celebrated men, as it will be necessary to resume the subject in a subsequent part of the work, on Fever. But it may be noticed, that it has always appeared to me to be a strong proof of the close connection between the state of body termed Fever, and that of Inflammation, that almost every individual labourer in this field of investigation has promulgated the same, or nearly the same doctrines, to explain both. Hence the pretty general belief as to their identity. But it will soon be my duty to offer my reasons for dissenting from this too sweeping pathology.

This slight notice of the opinions of Boerhaave, Stahl, and Hoffman, is sufficient to enable me to connect the more ancient views with those of modern date. The doctrines which were taught by Cullen, were founded upon those of the three last-mentioned physicians. He admitted the obstruction so much insisted on by Boerhaave, but denied that it was produced either by *error loci*, or lentor of the blood. He also took advantage of the hint which had been given by Stahl and Hoffman, respecting the influence of the nerves, and insisted that the obstruction was produced by " spasm of the extreme arteries, supporting an increased action in the course of them." Cullen maintained this doctrine even in those cases in which external inflammations are occasioned by the application of boiling water, blisters, &c.

The only observation which it appears to be necessary to

make, after giving this slight sketch, is, that all these illustrious physicians have been guilty of confounding cause and effect. When we place a ligature upon a large vessel, we do not find that general inflammation of the limb follows as a matter of course, which nevertheless ought to happen if mere obstruction were the cause of inflammation. This obvious objection has not escaped authors; and it has also been remarked by the acute mind of Allan Burns, that the effusion from the extremities of arteries into the cellular membrane, which takes place so frequently as the effect of inflammation, cannot be explained if the doctrine of spasm be admitted. Besides, Cullen has been guilty of a logical blunder in attributing the proximate cause of Inflammation to spasm of the capillaries, when, according to his own shewing, the spasm is occasioned by an accumulation of blood in these vessels.

According to John Hunter, Inflammation is to be considered only as a distracted state of parts, which requires another mode of action to restore them to a state of health; or, in other words, that Inflammation is a healthy action, which follows an injury done to some tissue or organ. In another place, he states that active Inflammation is to be considered as an increased action of the vessels, which simply consists, in the first instance, in a distension beyond their natural size. This he supposes to depend on the elasticity of the vessel, and a weakness of the muscular power. The whole of this he considers as a necessary operation of nature; and he seems to have believed, that the blood-vessels possess within themselves an innate active power of dilatation.

This leads me to state, that two modern opinions divide the profession. According to the one, Inflammation depends upon increased action of the capillaries of the part. According to the other, it is produced by debility or weakened action of the same vessels, and increased action of the trunks. On each side of this intricate and difficult question, are ranged the names of very eminent men. Both parties found their opinions upon microscopical experiments, performed on the web of the frog's foot. Each observed the same phenomena, but they have drawn different conclusions. Dr Thomson, for instance, applied salt to the frog's foot; the first effect

was to increase the velocity of the circulation, and to make the vessels larger to the naked eye, and of a brighter red colour. After the stimulant had been continued some time longer, the red globules became "less distinct than before the application of the salt, and obviously less distinct *from the rapidity of their motion.*"

Dr Wilson Philip performed experiments prior to Dr Thomson, on the frog's foot; and having first proved that he could create increased action in the capillaries without exciting inflammation, happened to meet with one unfortunate frog, who had already by some means contracted inflammation; and he found, upon applying the microscope, the vessels greatly dilated, and the motion of the blood extremely languid;—and he says, "It was at once evident, on observing the part through the microscope, that where the inflammation was greatest, the vessels were most distended, and the motion of the blood was slowest."

Dr Wilson Philip wet the web of the frog's foot with *distilled spirits,* but although he continued to keep it moist for ten minutes, or a quarter of an hour, he could not perceive the slightest symptoms of inflammation. "The vessels, instead of appearing redder and more turgid, were evidently *paler* and *smaller* than before the application of the spirits." No wonder. Distilled spirits was the most deceitful application he could have used for such an experiment. In the first place, it would no doubt stimulate the circulation in the part, but its quick evaporation would necessarily produce coldness, which caused *contraction* of the vessels, and rendered them *paler* and *smaller.*

Dr Hastings has subsequently repeated these experiments, corroborating those of the last named author. In all the experiments, whether performed by Thomson, Wilson Philip, or Hastings, the velocity of the blood was increased in the capillaries, in the state of simple excitement; but it constantly happened, when Inflammation commenced, that no globules could be seen in the blood of the affected vessels. Now, whether are we to join Dr Thomson in concluding, that they cannot be seen because of the "*rapidity of their motion,*" or Dr Hastings and others, who state that the blood in

an inflamed part, becomes itself morbidly changed, so that no globules can be detected? This is bringing the point in dispute within a very small space, and the reader is left to form his own opinions. Those which I have formed on the whole subject, shall be now detailed; and it may be stated, that this has not been done hurriedly, but after considerable experience, and a very careful review of all that has been written on Inflammation.

It appears to me, that three points have been much overlooked by writers on Inflammation. 1*st*, The influence of the nervous system; 2*dly*, The changes in the qualities of the blood itself; and 3*dly*, The diseased state of the vessels. I have myself performed experiments upon horses, which prove most satisfactorily the influence which the nerves have, *even* in Chronic Inflammation. It is well known that these animals are very liable to Inflammation of the foot, from different causes; and I have seen horses who had been lame for months, cured by dividing the nerves immediately above the fetlock joint, the effect being sometimes instantaneous, and occasionally permanent. With regard to the second point, there can be no doubt that the blood itself does become changed in the part affected; the red particles cease to be observed, and the blood assumes a flocculent appearance, becoming darker and darker, and the vessels become in some degree obstructed. It is not improbable that this change on the blood may be proved hereafter to depend partly, if not principally, upon diseased action of the vessels of the part.

It has been long known, that increased action of the vessels does not constitute Inflammation, as we see every day illustrated in the act of blushing, and by the employment of friction to any part on the surface of the body. In these instances, the vascularity soon subsides on the removal of the causes. But we can produce actual inflammation of the part by a continuance of the friction; the blood will stagnate, and we shall have all the phenomena, and the usual effects of slight superficial Inflammations. This state can also be produced by obstructing the flow of blood in the limb for a sufficient length of time by applying a ligature, and this is what actually happens in a case of strangulated Hernia.

The essence of Inflammation, partly consists in more blood entering by the arteries than can escape by the veins, or than can be made use of, as when the part is in a state of health, the consequence is a congestion from partial obstruction; and it is, I imagine, this degree of obstruction which produces the throbbing. The vessels of the inflamed part are greatly dilated, and the number of them containing red blood is greatly increased. It is also probable, that diseased action in the inner membrane of both arteries and veins produces Inflammation. Two well known facts may also be mentioned. Diminished action of the vessels may be produced and maintained for some considerable time, and the effect will be, not inflammation of the part itself, but of another part of the body at a distance. Again, if inflammation has been excited in any organ, an increased flow of blood takes place towards it, and all other parts must consequently suffer from a diminished supply of good arterial blood; this produces embarrassed action in the functions of all organs,—hence the general constitutional disturbance. In the practice of Physic, this last circumstance is too generally overlooked. Physicians are too apt to expect, that the constitutional symptoms will cease the moment the original disease is subdued; this not being the case, they often push their remedies far beyond the proper point, and make matters worse. This is perhaps more peculiarly a British error, and we are justly condemned for it by our continental brethren. Other Physicians, again, do very great mischief by stimulating and throwing in bark and other tonics at a too early period after the convalescence has commenced,—they will be found in the morning ordering a large bleeding, and in the evening a stimulant. Cases no doubt will occur in which this change is really necessary; all that is wished to be impressed upon the reader in this part of the work, is, that such practice is too often had recourse to, more from an unfounded *dread* of the occurrence of "typhoid symptoms," than from real necessity; and that sufficient confidence is not placed in the powers of the constitution to repair injuries which have been sustained. They are, indeed, too often found tampering with the human frame, as if it resembled a piece of machinery of their own construction.

It must be confessed, that there is yet something more than has been discovered respecting Inflammation. Physiologists have to settle several disputed points in the doctrines of the circulation ; and to discover a great deal regarding the Anatomy and Physiology of the nervous system, before Pathologists can be expected to advance their part of the science of Medicine in any considerable degree.

Considerable difference of opinion still exists among physiologists as to whether the circulation of the blood in the capillaries depends entirely upon the *vis à tergo* it receives from the heart, or whether these vessels have that power without the aid of the heart's action. Those who examine this subject without preconceived notions, and with no other view than to discover truth, cannot reject the *vis à tergo* which the whole column of blood is regularly receiving from the heart. Neither can they reject the action which the vessels possess from their elasticity, in aiding other parts of the machinery, not to mention their power of contracting themselves even into much smaller diameter than is natural to them, when circumstances require it for the preservation of life. With respect to the first point, it will be observed, that if one of the smallest arteries in the body, and at the greatest possible distance from the heart, be divided, the blood will be perceived to flow *per saltum*. As to the second, if the extreme vessels are quiescent, not possessing any power of acting within themselves, and depending entirely upon the action of the heart, how could irregular determinations of blood take place? When any internal organ is inflamed, we are taught, by experience and observation, to apply blisters and other irritants to the surface of the body, as a part of the remedial process. These applications excite a temporary inflammation on the surface, frequently to the complete relief of the internal disease. This translation, as it may be called, is not affected through the agency of the heart, by whose contractions the blood is propelled into the vessels generally; it can, in all probability, have no power to send blood to *this*, in preference to *that* part. Before concluding this subject, I beg to enter my protest against the employment of the term "debility," as too generally applied to the capillary vessels of an inflamed part. If a man were able

to walk three miles in an hour with an ordinary burden on his shoulders, it surely would not be correct to say he was in a state of debility because he could not go over so much ground if he had to carry an additional hundred-weight. This is exactly the condition of the blood-vessels; they are well able to perform their natural work, but when over-loaded, they are rendered incapable.

SECTION II.

Causes of Inflammation.

In stating the Causes of Inflammation, it is my intention to avoid following out occult causes. In medical investigations, it is very injurious to the science to affect being overwise, and it is surely more philosophical to confess our ignorance than to attempt to leap over difficulties by special pleading, which, in the present state of our knowledge, are insurmountable. Instead of descanting at great length upon proximate, remote, exciting, and pre-disposing causes, it will be better to speak of common and specific Causes of Inflammation. The disease is improperly termed by Cullen and others, the "proximate cause;" this term will, for a considerable time to come, be fostered by symptomatical physicians, who call the symptoms the disease, and the disease the proximate cause; but there is no reason why it should be retained in this work, unless it were employed in the following manner,—proximate cause of the symptoms. As to predisposing causes, it is more consistent to take them into consideration, when treating of prevention of diseases; but many writers have been guilty of great enormities even with regard to the influence of these in the production of disease. One, with whose writings most medical men are well acquainted, in treating of the predisposing causes of hooping cough, among others, mentions "a serous temperament,—a scrofulous constitution,—dentition,—a disposition to contract catarrhal affections,—the retrocession of eruptive diseases."

The chief common causes in the production of internal Inflammation are exposure to cold; sudden vicissitudes of weather, particularly when the air is damp; application of irritating substan-

ces; irregularity of bowels; unwholesome diet; insufficient clothing; cold drinks, particularly when the body is warm; depressing passions, &c. Almost all the common causes tend to produce Inflammation in the same manner, by inducing irregular distributions of the blood and venous congestion. The lost balance of the circulation is marked sufficiently well in the beginning of almost all acute diseases, by the accession of rigors, coldness, and paleness of the surface of the body. Some individuals are more liable to inflammatory attacks than others, and some to Inflammation of a particular tissue or organ upon every exposure. Such persons may well be said to be liable to or susceptible of such disease. There can therefore be no objection to the term in this limited sense.

Few persons escape Inflammatory affections produced by specific causes. The contagion of small-pox is termed a specific cause, because nothing is capable of producing the disease but its own contagion, in whatever way it is communicated. Measles is also produced by its specific cause. Scarlatina also, and *perhaps* hooping-cough. Erysipelas is not to be ranked with these specific diseases, because it is not produced by a specific cause, as is too generally imagined. If Erysipelas were produced twenty times, by inserting matter taken from an erysipelatous surface, expressly for the sake of experiment, still it cannot be ranked as a specific disease, because it has also followed an injury produced by a splinter of wood, a perfectly clean sewing needle, a rusty nail, &c. It has also occurred after a prick received in dissection. No one ever alleged that small-pox, measles, or scarlatina, were ever produced in this fortuitous manner. It may be also mentioned that there are other matters, whose nature is unknown, but whose effects are frequently observed as capable of producing inflammatory affections, viz. malaria, sometimes denominated marsh miasm, and human effluvia, together with another and still more mysterious agent, epidemic influence. But it appears to me, the great agent in the production of inflammatory affections is the sudden application of cold to the surface of the body, particularly when the stomach and bowels are out of order, and the mind depressed, producing disease in an organ at a distance. Cold wet feet, for example, will sometimes produce determi-

nation to the head, and phrenitis will be the consequence; or to the lungs, producing pneumonic Inflammation, &c. Dr Thomson states that this cannot be explained upon any principle. The doctrine of determination of blood explains it so far, and in my humble opinion quite far enough for all practical purposes. It is not, however, actual, but relative cold, which is so prejudicial to the human body; it is long exposure to cold when the body has been previously much heated.

An individual, after sudden exposure to a cold damp atmosphere, may be attacked by Inflammation of the lining membrane of the air passages. It becomes an interesting and important question to determine upon what part of the human frame the cold air acts. Dr Thomson says, at page 57. of his work on Inflammation: "In some instances cold, or a diminution of temperature, seems to act more directly upon the parts with which it comes in contact. We have proof of this in the Inflammation of the mucous membranes of the nose, fauces, trachea, and bronchiæ, from the inhalation of cold air." This is a most unhappy illustration. It is apparently a matter of little consequence how cold the air is which passes into the lungs, provided the body is sufficiently protected by warm clothing. In cold regions, if Dr Thomson's hypothesis were true, an individual ought never to be free from bronchitis. We are assured, however, that the sailors in the voyages of discovery, which were made by Captain Parry, to the North Pole, enjoyed remarkably good health, even during the various excursions.

There is one other curious point which must be noticed. Extreme cold produces exactly the same sensations and the same effects upon the living animal fibre as intense heat. Take a piece of frozen mercury in the hand, and it will cause a sensation like that produced by red hot iron,—inflammation and vesication will follow; and if applied long enough, the destruction of the part will take place. The heat destroys vitality by the addition of too much caloric; the frozen metal, by abstracting it too suddenly.

SECTION III.

Division of Inflammation into varieties.

Inflammation has been variously divided and subdivided. The terms acute, sub-acute, and chronic, will be employed in the course of this work, as being sufficiently precise, and well understood. It is wished to avoid the use of the term "passive," because it is employed too vaguely, sometimes to express the existence of sub-acute inflammation, at others that of the chronic kind. John Hunter also instituted the terms healthy and unhealthy. Is Inflammation a disease? If it is, it is certainly not proper to call it healthy. Other species of Inflammation have been mentioned, as scrofulous, gouty, rheumatic, erythematic, erysipelatous, &c.; but it is my belief, that as pathology improves, they will be less frequently employed. Another obvious division of Inflammation depends upon the tissue or organ affected. From the plan which has been laid down for this work, it is unnecessary to speak of this division in this place.

SECTION IV.

Phenomena of Inflammation.

The appearances of external Inflammation are redness, swelling, heat, and pain. All these taken together, leave no doubt as to the existence of Inflammation. In this respect, the surgeon has the advantage of physicians. He can see and feel the part affected, besides the power of judging from the constitutional symptoms, and the account the patient gives of his own sensations. Whereas in physic we have greater difficulties to encounter in forming a diagnosis. We may observe local and constitutional symptoms also; but it does not always follow, because there is dyspnœa and fever, that the lungs are affected; the disease may be inflammation of the pericardium. There may be violent vomiting, tenderness in the epigastrium, thirst, with more or less fever; the disease may not be situated in the stomach, but in the head. There

may be severe local and constitutional disturbance, without the presence of the slightest degree of inflammation, merely from a neuralgic affection of some tissue or organ, or from impeded functions of some viscus. During life we cannot see the state of internal organs, to ascertain whether they are red and swollen; but we may have heat, pain, and fever, without the least inflammatory action. It will be proved, in a subsequent part of this work, that the pulse cannot be depended on. With respect to buffy blood *, it may exist without actual inflammation; and, in inflammatory complaints, the blood does not always yield it. The shape of the dish modifies this appearance, so does the manner of opening the vein. Mental agitation and fatigue produce the buffy coat. Sometimes it does not appear on the blood till the patient has been largely bled. I am inclined to place considerable dependence, however, on the buffy coat, taken in conjunction with other circumstances, particularly when the surface is also concave, or "cupped," as it has been termed, and when the quantity of serum is large.

It has often occurred to me to see dissections where great destruction had taken place in the lungs from Inflammation, and yet there was little or no pain complained of during life. Nay, I have seen Inflammation of the Pleura to such a degree as to occasion death, yet there were none of the ordinary symptoms, or at least they were too slight to direct the medical attendants to the true seat of the disease.

I feel convinced that no pathological physician will join a modern writer on the Practice of Physic, in the following dogmas: "Delirium marks inflammation of the brain; impatience of light, ophthalmia; hoarseness, inflammation of the

* Blood is said to be "buffy," when the surface, instead of being of a reddish colour, presents a yellowish crust of greater or less thickness. There are various opinions as to the cause of this appearance. Some attribute it to the slower coagulation of the blood; others to an increased quantity of fibrine; or merely to the hurried state of the circulation. Of one fact I am quite certain, from repeated observations, that the blood may be seen frequently to be not in a natural state, while it is yet flowing from the vein, and before the stream has reached the cup.

larynx; and dyspnœa, that of the lungs." The practice of physic would indeed be simple and certain, were these things true. But this is not the proper place to enter into a refutation of these arbitrary statements. The uncertainty of the pulse has been already mentioned. The same remark may be made respecting the combination of symptoms denominated Fever. Inflammation may be going on towards a fatal termination, in an important organ, without any febrile movement. This was noticed long ago by Morgagni, Valsalva, and others, and it led them too hastily to conclude, that mortification of internal organs occasionally took place without previous inflammatory action.

What occasions the redness, swelling, heat, and pain, in external inflammations? The *redness* is occasioned, no doubt, by the large size of the vessels, and the increased quantity of blood in the part affected. Vessels which formerly transmitted a lymphy fluid, now circulate red blood.

The swelling has been erroneously ascribed to the expanded state of the blood from increased heat; but it has been proved, that the blood contained in the vessels of an inflamed part, is not one degree hotter than that which flows from the heart; besides, a few degrees of caloric could have no effect in producing the swelling. It seems to be owing to the increased quantity of blood in the part, and the effusion of a lymphy fluid into the surrounding cellular substance,—the action of the absorbents being at the same time, in all probability, interrupted.

Heat.—Boerhaave and others imagined, that this symptom depended on the friction of the red globules against the sides of the vessels; and that, in inflamed parts, the friction is greatly increased by the obstruction which exists. This, like all Boerhaave's doctrines, is too mechanical. It is difficult to determine on what cause the increased heat depends, and, fortunately for humanity, it is not of much consequence; but it is probably partly owing to a peculiar action in the nerves of the part, and partly to the increased quantity of blood, by which the *quantity* of caloric is augmented, although it is not indicated by the thermometer.

Pain.—The pain in an inflamed part is not in general con-

tinued pain, but is most severe during the systole of the left ventricle of the heart; the nerves are pressed upon, their sheaths or their vessels are perhaps involved in the disease. It would seem, however, that the state of the blood influences the sensibility of the body in diseases; if the mucous membrane of the air passages to the minute ramifications of the bronchiæ be inflamed, the blood circulating in the body will be principally venous, in which case little pain is complained of any where.

SECTION V.

Terminations of Inflammation, with a short account of the Effects of Inflammation on the principal Tissues.

Inflammation, (says John Hunter,) *cæteris paribus*, always proceeds more favourably in strong than in weak constitutions; for, when there is much strength, there is little irritability. In weak constitutions, the operations of inflammation are backward, notwithstanding the part in which it is seated may, comparatively speaking, possess considerable organization and powers of life.

This observation, however true with regard to surgical pathology, cannot be made to apply so universally in the practice of Physic. We often see acute diseases of internal organs, gallop through a rapid course to a fatal termination, in robust, rather than in delicate individuals. On the other hand, we do now and then meet with delicate constitutions labouring under internal inflammations, and the cases go wrong, because the patients are too weak to stand the necessary remedies, and not because the diseased action has any peculiar tendency to terminate badly.

In another place Mr Hunter remarks:—"It has been supposed that different species or varieties of inflammation arise from the difference of the nature of the part inflamed; but this is certainly not the case; for if it were, we should soon be made acquainted with all the different inflammations in the same person at the same time, and even in the same wound; for instance, in an amputation of a leg, &c.....

It is the adhesive in them all, if the parts are brought together; it is the suppurative, if the parts are exposed." This observation also, no doubt, holds true in surgery; but it cannot be admitted in physic, as it is well known that Inflammation of different organs and tissues, has an aptitude to terminate in each in its own peculiar manner.

The terminations of external Inflammation are, in the cure, which is most inaptly styled "resolution;" suppuration; ulceration; and gangrene. The first is, of course, the most desirable; and fortunately for mankind, it is the most frequent. It is evinced by a remarkable diminution of pain,—the swelling subsides, the fever gradually abates, pus does not form, nor does the structure of the part suffer the least permanent injury.

The second termination is that termed Suppuration. After the inflammation has existed for a certain time, which varies much in different persons, pus begins to be secreted in the cellular substance, and either collects in one cavity, as in common phlegmon, or is diffused very generally over a whole limb, as in phlegmonous erysipelas.

Ulceration is the third termination mentioned.

The most dreaded termination, and fortunately the rarest, is the entire death of the parts affected, which are then said to be mortified or sphacelated. This condition is recognized by the sudden cessation of pain; the part, from being of a bright red colour, assumes a dusky hue; it crepitates from the extravasation of air in the cellular substance, vesications arise, a very peculiar odour is perceived, the pulse sinks, and every appearance announces speedy death. Death, however, does not always follow mortification of external parts; the dead are sometimes separated from the living parts by a vital process, and are ultimately thrown off, the patient surviving the injury.

It is now necessary to treat very shortly of the effects of inflammation in the following order: 1. Of the skin. 2. Mucous membranes. 3. Cellular membrane. 4. Fibrous membranes. 5. Serous membranes. 6. Inflammation of the substance of the solid viscera and glandular system.

1. Inflammation of the skin.

The effects of inflammation on this part of the body are very various; such as the formation of rashes, as in Scarlatina, Roseola, &c.; pustules, as in Small-pox, Porrigo, &c.; vesicles, as in Chicken-pox, Herpes, &c.; papulæ, as in Measles, Lichen, &c.; scales, as in Lepra; ulceration with loss of substance; and also in Gangrene.

2. The effects of inflammation on mucous membranes, are, effusion of mucus, or of matter of a purulent character—a mixture of the two, appropriately termed Muco-purulent; of a serous fluid, and coagulable lymph. These different products of inflammation are sometimes colourless, at others yellow, and also sometimes red like currant jelly. The mucous membranes are likewise liable to tubercular formation, softening, thickening, passive hæmorrhage, ulceration, contraction, and sloughing, as the effects of inflammation.

Some of these effects are common to the mucous lining of the air passages, alimentary canal, and urinary passages, as for instance, copious exudation of mucous, softening, thickening, passive hæmorrhage.

Some are not so liable to affect the mucous membrane in one of these passages as in another. Tubercular formation, for instance, is more frequently met with in the alimentary canal. Ulceration is sometimes found in the air tubes, but more frequently in the stomach and bowels, rarely in the bladder. Some parts of the mucous membrane of the same canal are more liable to inflammation and ulceration than others; for instance, the terminations of the Ilium and Colon.

Inflammation is more liable to terminate in the exudation of coagulable lymph in some parts than others; for instance, in the wind-pipe and rectum, although other parts are not exempt.

Vascularity, by itself, is not a certain proof of inflammation having existed in the mucous membranes before death, because it may be found only in depending parts of the canals; and congestions of this membrane may be occasioned by diseases of the heart and lungs, and by any other cause which obstructs the circulation of the blood.

3. Inflammation of the cellular membrane terminates in effusion of lymph, of serum, of pus, and in gangrene. Inflamma-

tion in this tissue is generally termed phlegmonous, and although it is so extensive and loose in its texture, the disease tends to circumscribe itself, and to make its way to the surface of the body. Occasionally, although rarely, the inflammation has a tendency, from the first, to spread itself very extensively, from peculiar circumstances which have never been satisfactorily explained. To express this condition, several new-fashioned names have been invented; the best of which—"diffuse cellular Inflammation," is the most applicable. Sometimes the death of a small portion of the cellular membrane takes place, then the affection is called carbuncle; the part so affected sloughs, and becomes troublesome, if not relieved by timely surgical assistance.

4. Inflammation of fibrous membranes. This is the tissue which is generally supposed to be affected in gout and rheumatism; the chief peculiarities are said to be, that it never terminates in suppuration, ulceration, or gangrene, and the functions of the brain are rarely disturbed during its course. It is also said to terminate sometimes by effusions of a gelatinous nature, or depositions of calcareous matter. This subject ought to be held as being open to future investigation; it is by no means proved that the inflammation which attends gout or rheumatism is situated in such a texture; it looks to me more like inflammation of the extremities of nerves. All the phenomena and the terminations tend to confirm this suspicion, more particularly when we reflect upon the sudden metastases. At all events, it is rather strange that so many authors should make the assertion, that inflammation of fibrous membranes *never* terminates in suppuration and ulceration. What do they call the periosteum? But this question is too intricate and extensive to be investigated in this work.

5. Serous membranes in a state of health show few red vessels, but their surfaces exhale a thin serous fluid, which is just sufficient to bedew them. When inflamed, red vessels are seen during life, and an effusion takes place either of serum or lymph, or of both. Sometimes the effusion is limpid, at others turbid like whey; at other times it looks like pus, and occasionally it is greenish, or like lees of wine; often large masses of coagulable lymph are discovered glueing the parts together. Adhesions between the viscera

of the thorax and abdomen seem to be effected by means of intervening portions of lymph, which subsequently become organised. The quality of the effused matter is sometimes small, amounting only to a few ounces, at others there are several pounds. It has occurred to me frequently to see ten, twelve, and twenty pounds in one side of the chest.

A bloody effusion is sometimes found, more particularly in the abdomen. Ecchymosis not unfrequently takes place when the inflammatory action is very violent; and there can be no doubt that tubercles form *occasionally* under a sub-acute and chronic inflammation of this class of membranes, more particularly in the peritoneum, pleura *pulmonalis*, and arachnoid coat. Emphysema also occurs in the cellular tissue immediately under the peritoneum. It has been proved by experiments, that the peritoneum, however vascular during life, under acute inflammation, loses its red appearance even during the act of death. In chronic inflammation, however, it is sometimes found very red in colour, and thickened in texture.

A great deal has been written during the last few years upon inflammation of the arachnoid, by which science has certainly been benefited; but it appears to me that a great deal of misconception has taken place upon this subject. Although red vessels are rarely to be seen in the arachnoid, so rarely that in my whole life one instance only has presented itself to me, yet no one who has paid attention to the situation of effusions of matter in the skull will deny the existence of inflammation in that tissue. But I apprehend it is comparatively rare. In my examinations (and they have not been few in number) to ascertain this point, it has not occurred to me above six times to find the effusion in the proper place. If, on examining the abdomen, we were to find no vascularity, and no adhesions, or effusions of serum or lymph, within the cavity of the peritoneum, but were to discover the effusion on the wrong side of the membrane, extravasated for instance in the cellular tissue which connects this serous membrane to adjacent parts, should we be entitled to say, from any thing we yet know, that this was a consequence of peritonitis? In the head cases, to which I refer, the effusion is between the arachnoid and the pia mater, which are united by fine

cellular substance, *the wrong side*, if it proceeded from diseased action in the former membrane, unless it has two serous surfaces, which has not been maintained by any anatomist. There is not, perhaps, in the whole body, a more vascular membrane than the pia mater, and I cannot avoid concluding that the effusions, not only on the surface of the brain, but also in the ventricles, depend more on diseased action in this membrane than any other.

Ulceration is also to be considered as an occasional, although rare, effect of inflammation in serous membranes. It has only presented itself to me three or four times. There are two splendid specimens of this change in my museum, one of ulceration of the pleura pulmonalis, and costalis, the other, of the membranes on the surface of one of the hemispheres of the brain.

Gangrene is one of the rarest results of inflammation of serous membranes, and it is to be doubted whether it ever occurs when the diseased action is confined to this tissue.

6. Inflammation attacking the solid viscera and glandular system. The first circumstance we perceive is the presence of an unusual quantity of blood in the affected organ. The first change in the structure of the viscus is softening. Hardening is owing, in general, to chronic inflammation. With respect to inflammation of the solid viscera, it is to be remarked, that if the liver be excepted, the termination in the formation of abscess is rare. In the lungs, it is admitted by the best authorities to be rare; I have only seen it once in the substance of the lungs. In the brain, it is probable that the peculiar change which has been denominated *ramollissement*, and the remains of old apoplectic effusions, together with tubercular degeneration, have been too often mistaken for abscesses.

Tubercles form in the substance of various organs, as in the liver, spleen, kidneys, lungs, and brain; and there can be no doubt that these are sometimes the result of an inflammatory action, but no one is warranted in asserting that they are invariably so produced. It has frequently occurred to me to find tubercular depositions in the lungs and substance of the brain of individuals, which were certainly not caused by

inflammation, and which, in all probability, had been in existence for years without exciting inflammation. This statement refers to persons who were either killed by accident, or who died suddenly without any previous complaint; or who were carried off by other diseases. One of the finest preparations in my collection, is the heart of a woman, extensively and deeply tuberculated, who died in a moment without a previous complaint, and no other cause could be discovered.

Lastly, Inflammation affecting glands has an aptitude to terminate speedily in suppuration. Sometimes, however, they suppurate very slowly, and occasionally induration takes place.

From this rapid sketch it may be thought that the subject has not attracted a sufficient share of my attention, and that several points have been altogether overlooked; viz. the marked difference in the constitutional symptoms in inflammations affecting different tissues; and the general principles of treatment. The truth is, that the importance of these points is felt too deeply to allow me to treat of them in a general description,—a description, moreover, which ought necessarily to be very short. These subjects will be fully entered into in subsequent parts of the work *.

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* The reader is referred to the following works:—Hunter on the Blood; Thomson on Inflammation; Wilson Philip on Febrile Diseases, &c.; Hastings on the Lungs; James on Inflammation; Boisseau's Traité des Fièvres, (1824.)—Black's Essays on Capillary Circulation and Inflammation.

CHAP. II.

Fevers.

SECTION I.

History of the General Doctrines of Fever.

The importance of the subjects which are to be discussed in this chapter is very great, from the frequent occurrence and fatal termination of this class of disorders; and the more so, when we reflect on the vast extent of our dominions abroad, where febrile diseases carry off four-fifths of those who die.

If a person, after shivering, feels hot, restless, and thirsty, has a quick pulse, and complains of languor, it is said he has a fever.

Galen's notion of fever appears to have been, that an extreme degree of heat is formed in the heart, and from thence extends itself to the rest of the body. It is one of the oldest notions in medicine, that fevers are produced by a concoction of something pernicious to the system, which is expelled by a critical effort of nature, as, for instance, by frequent and copious evacuations from the bowels, free perspiration, &c. This is what is termed the humoural pathology. Boerhaave entertained the same opinions of fevers as of inflammations, viz. the viscidity of the blood, the *error loci*, and an acrimonious state of the fluids. He conceived that the cold stage of fever was produced by the *error loci*, and all that followed was to be regarded as natural consequences. As has been mentioned in treating of inflammation, the first dawn which appears to have been given to the world of the influence of the nervous system in

fever emanated from Stahl, and it was improved upon by his colleague, Hoffman. They supposed that fever consisted in a tonic spasm, produced on the extremities of the nerves by a deficiency of action in the brain. They also adopted the humoural pathology; but insisted, that the sanative process was impeded by the spasm at the extremities of the nerves, thereby preventing the disease from being thrown off; and it appears to have been their opinion, that it was this resistance which produced the constitutional commotion which attends fevers.

According to Cullen, the human body is composed of certain organs, whose actions are regulated according to laws peculiar only to animal life, and superintended by a mobile and conservative energy which is situated in the brain, acting wisely but necessarily for the general health, preventing mischief and repairing injuries, by a pre-established relation between the changes produced, and the motions required for the restoration of health, which actions are performed by the nerves. According to him, the muscular filaments are merely the extremities of nerves. He supposed that fever is produced by a collapse or diminution of the energy of the brain, in consequence of the influence of contagion, miasm, cold and fear acting as sedatives. This diminished energy produces an universal debility, and causes a spasm of the extreme vessels, and in this spasm the cold fit is supposed to consist. In fact, that fever is nothing more than diminished energy of the brain, and spasm of the capillaries. He conceived that the debility proves a stimulus to the circulating system, exciting increased action of the heart and arteries, which continues till it restores the energy of the brain; by removing the cause of the spasm of the extreme vessels, relaxation takes place, and health is restored by a copious sweat, or discharge of some of the other excretions. He divided the whole phenomena into three stages; *first*, the stage of diminished energy of the brain, and consequent debility; *secondly*, that of spasm of the extreme vessels; and *thirdly*, all that follows till the commencement of the sweating stage. Feeling his doctrines to be exceedingly weak, Cullen sought support from certain powers which are supposed to be inherent in the constitution,

which enables it to resist, and throw off diseases, commonly called the *vis medicatrix naturæ;* but it is important that he should here speak for himself. "Upon the whole, our doctrine of fever is explicitly this:—The remote causes, are certain sedative powers applied to the nervous system, which, diminishing the energy of the brain, thereby produces a debility in the whole of the functions, and particularly in the action of the extreme vessels. Such, however, is, at the same time, the nature of the animal economy, that this debility proves an indirect stimulus to the sanguiferous system; whence, by the intervention of the cold stage, and spasm connected with it, the action of the heart and large arteries is increased, and continues so, till it has had the effect of restoring the energy of the brain, of extending this energy to the extreme vessels, of restoring their action, and thereby especially *overcoming the spasm* affecting them; upon the removal of which, the excretion of sweat, and other marks of the relaxation of excretories, take place. This doctrine will, as I suppose, serve to explain, not only the nature of fever in general, but also the various cases of it which occur."

It is remarkable that Cullen, who has insisted with so much pertinacity on spasm of the extreme vessels being a principal part of fever, should so completely have forgotten himself, as to assert that atony, which is the very reverse of spasm, is also a principal circumstance in the pathology of fever. But he shall again speak for himself. "From the whole we have now said on the subject, I think it is sufficiently probable, that the symptoms of anorexia, nausea, and vomiting, depend upon, and are a proof of, an *atony* subsisting in the extreme vessels on the surface of the body, and that this *atony*, therefore, now ascertained as a matter of fact, may be considered as a principal circumstance in the proximate cause of fever." "This atony we suppose to depend upon a diminution of the energy of the brain, and that this takes place in fevers we conclude, not only from the debility prevailing in so many functions of the body mentioned above, but particularly from symptoms which are peculiar to the brain itself."

The meaning of "spasm of the extreme vessels," is morbid contraction; that of atony of the extreme vessels, is a defect

of muscular contraction. Can a morbid contraction, and a morbid relaxation, co-exist in the same vessels in the same disease? This contradiction appears to me to be quite unparalleled,—it always surprised and disappointed me in the investigation of this subject; and it is astonishing that doctrines founded upon such statements should still be maintained. In the present improved state of pathology it is scarcely necessary to enter into proof, shewing the error of attributing to spasm of the extreme vessels any part of the pathology of fever; but it may be mentioned that, in some fevers, copious perspiration takes place through their whole course; and, even in the cold stage of intermittent, the surface is occasionally covered with moisture *.

It appears to me, that Cullen confounded debility or actual weakness with oppression from obstructed action. It is not like the debility which takes place from starvation, a protracted disease, or great losses of blood, &c.; it is mere oppression, produced by the loss of balance between the arterial and venous systems: and the proof of this statement consists in the well known fact, that upon the restoration of this balance, the overpowering sensations of weakness vanish, even when brought about by blood-letting, which is a remedy directly debilitating. If debility formed such a regular and indispensable part of fever, two circumstances ought to follow as necessary consequences. 1. Weakness produced in so many different ways, should invariably excite fever. 2. Once a fever becomes lighted up in the system, it ought to be impossible to put it out on any occasion, and particularly by any antiphlogistic means; and the longer such an action continues, the greater will be the debility, and therefore the diseased action ought to become more and more virulent.

The term "diminished energy of the brain," being a principal part of the foundation of Cullen's doctrines, cannot be allowed to pass without notice. It is one of those vague terms too often used by him to express a great deal more than we actually know, but which explains nothing. It is one of those

* I have been more full upon this subject, in a paper which will be found in the Medico-Chirurgical Review for January 1828.

expressions which satisfies the youthful mind without instructing it, and it prevents inquiry. What is the natural energy of the brain? how is it propagated? It would also be very satisfactory if the living advocates of this system would inform us at what period of the disease the energy of the brain exists in its most perfect state, and greatest strength. Is it at the period of attack, or at its termination? Until these questions are satisfactorily answered, it appears to me to be most unphilosophical to treat of diminished energy of the brain as a principal part of any disease, because it has no precise meaning. It can be of no use in explaining the nature and seat of fever, and of still less use in directing the plan of treatment.

Cullen rejected the humoural pathology, and seems to have almost entirely disregarded the effects produced by outward causes, and inward irritations, in producing irregular determinations of blood, which, I shall hereafter attempt to shew, are the great agents in exciting diseases, and more especially fever.

It may be noticed in this place, that Dr Mason Good maintains, in his late large and laborious work, the truth of the chief parts of the Cullenian doctrines.

According to Dr Brown, man is made of organized materials, endowed with a principle of excitability or predisposition to excitement, by means of a great variety of stimuli, some of which are constantly acting upon the machine. This excitability, in point of fact, is nothing more than the nervous energy of Dr Cullen; it is the principle of life, or life itself. It is, according to Dr Brown, constantly varying in its accumulation and exhaustion; yet it differs somewhat from the nervous energy of Dr Cullen, which is influenced by something unconnected with the matter of organization, and which he terms "*vis medicatrix naturæ*,"—whereas Brown's excitability is passively exposed to the effects of such stimuli as it may chance to meet with, yielding to their influence. He divided all diseases into two classes: the first, caused by accumulant excitability, and marked by direct debility; to this class he gave the name of *Sthenic*. The second, produced by exhausted excitability, and marked by indirect debility; this he

termed *Asthenic*. And his treatment is as simple as the arrangement, in the first case, to reduce the excitability by antiphlogistic means; and in the second, to increase the excitability by an opposite treatment. Dr Brown made many converts, but they soon began to fall off; and it is curious, that in proportion as they declined in numbers at home, they increased abroad, and are at this very moment, with some modifications, in considerable force in Italy.

Dr Darwin so far improved the Brunonian doctrines. He made the brain the common fountain from which every other organ is supplied with sensorial fluid, and is itself supplied from the blood, as the blood is from the food of the stomach; so that, according to his notion, it is a mere secretion, and capable of being exhausted in four different ways, through the agency of four separate faculties which he ascribes to it.

1*st*, The faculty of *irritability*, exhausted by external stimuli, affecting simple irritable fibres.

2*d*, Of *Sensibility*, exhausted by stimuli affecting the fibres of the organs of sense.

3*d*, Of *Voluntarity*, exhausted by stimuli affecting the fibres of those organs which act in obedience to the will.

4*th*, and lastly, of *Associability*, exhausted by stimuli affecting organs associated in their actions by sympathy or long habit.

By each of these means, Darwin supposes the sensorial power becomes evacuated, as by food and rest it becomes replenished, often indeed with an accumulation or surplus stock of power.

He therefore considers the occasional causes of fever, (whatever they may be), as inducing a torpor of the extreme arteries, and the subsequent heat, as an inordinate action of the sensorial power hereby accumulated to excess.

This subject might be pursued much further, but a more minute detail would not consist with the plan of this work, particularly as the individuals whose names have been mentioned have bewildered themselves with theories, have substituted mere ideas for facts to which they have given appellations, have replaced one mystery by adding another quite as inexplicable, and seem to have considered the subject without reference to morbid dissection, or to the habits and modes of

living in different societies and climates. I still have to investigate the doctrines of more modern pathologists, which are alleged to be founded on morbid dissection. Some of these allege that fever (or, as they term it, the proximate cause of fever) depends upon inflammation of some particular organ. Thus it has been attributed to inflammation of the brain —of the liver—of the digestive organs generally—of the mucous membrane of the stomach and intestines particularly—and of the arteries and veins.

It is necessary to caution young practitioners, and more particularly those commencing the study of medicine, against receiving the arbitrary doctrines of fever which divide the profession in the present day, viz. that fever is invariably produced by inflammation of one viscus, or set of viscera.

Dr Clutterbuck, a physician of great reputation, has most ingeniously attempted to prove, that fever depends upon some degree of inflammation of the brain; and in reviewing the merits of his system, it must be kept in view, that he practises in the greatest commercial city in the universe, among a people whose minds, generally speaking, are more actively employed than their bodies, who are exposed to intense anxieties, occasioned by extensive speculations and reverses of fortune, who are either in a state of considerable excitement or depression; if we add to these considerations, the effects of heavy meals and sedentary habits, impeding the functions of the stomach and bowels, it will be seen, that he had considerable foundation for the opinions he has been led to advance. But I object to the arbitrary application of his doctrines.

Broussais, to whom the profession also stands greatly indebted, and whose merits, like those of many others, have been more justly estimated abroad than at home, asserts that all fevers may be referred to gastro-enteritis, simple or complicated. In France it is no wonder that Broussais should so frequently find the mucous membrane of the stomach and intestines altered both in appearance and structure, if the habits and mode of living of the people are recollected. The stewed meats, the salads, and oils and sweets, consumed by Frenchmen among the higher ranks, together with the hard beer and acid wines which they drink, and the unwholesome food eaten by the

lower ranks, all tend to produce irritation in the digestive organs. Sooner or later, these irritating matters produce increased vascularity, which must frequently terminate in inflammation and ulceration. It is easy, therefore, to account for the doctrines of Broussais, and for the tone in which he supports them; and while I allow him every merit and commendation which is so justly his due, I cannot help objecting to the arbitrary manner in which he wishes to apply them.

I have yet to mention, that there are many individuals who assert that fevers have no connexion with inflammation, except in as much as they *occasionally* produce inflammation in their progress; and in alluding to the appearances frequently found on dissection, they triumphantly but erroneously allege, that such appearances are the effect, and not the cause of the disease. Change of structure is certainly only a consequence of previous disordered action, but it is not difficult to trace the progress of the local disease, from the beginning of the disordered action till the structure of the part is injured. But I need not dwell upon this point in this part of the work, as I shall have to allude to it hereafter. I shall only take the liberty to observe, that there are many individuals who cannot imagine that inflammation may exist in any organ or tissue of the body in any degree, without a strong and a quick pulse, thirst, restlessness, and considerable pain. Fatal error!

The war of opinion in France, respecting the pathology of fever, is at present too great to entitle us to expect candour from all the combatants. Much talent is already in the field; and when the stage of excitement is over, the science of Medicine will probably be found to have gained very considerably. Some are ready to assert the universal truth of the *new doctrines* at the point of the sword, while others as strenuously, and apparently as sincerely, deny them. New advocates are daily coming forward on each side; and while we may express our admiration of the zeal, ability, and assiduity, displayed by so many individuals, still I cannot avoid stating my opinion, that their services would be more useful to suffering humanity, if many of the authors thought more, and wrote less. From this reflection, I would beg to exclude the truly valuable works of Broussais, Andral, Boisseau, Bailly; but

even with respect to these, if M. Bailly is excepted, it is melancholy to reflect upon the little practical benefit they have themselves derived from pathological investigations. They have filled large volumes with cases and dissections, but their practice is too expectant on most occasions, and generally weak and vacillating. Having already expressed myself candidly respecting the great errors of British practitioners, I may be permitted to do the same with respect to those of the French School, and I must further add an expression of surprise, at the unacquaintance which their best writers display, of British medical literature. Frequent opportunities will occur, in the course of this work, to quote with benefit to my readers, many important facts from French works, but in this doctrinal history it would be of little service in general, and occasionally would make "darkness visible."

It is now time that I should state the views which I have been myself led to form on this important subject. 1*st*, Fevers frequently depend on inflammation of an acute, but more frequently of a sub-acute nature, of every organ and tissue of the body. If the inflammation be acute, the febrile symptoms will be correspondingly high; but if sub-acute, they will assume a slighter form.

2*d*, Fevers very often depend upon mere functional derangement of some organ, having as yet no connexion with inflammation.

3*d*, Fevers sometimes depend on the mere loss of balance in the circulation, producing congestion; and fevers arising from these two last causes are generally called *idiopathic*.

After having watched the progress and termination of fevers in various climates, I have been led to conclude, that the nature and seat of fever, (which may be called its essence,) is pretty much the same in all constitutions, in all climates, and under all circumstances, the only difference being in intensity, and the rapidity with which some run through their course; and I trust that the division of fevers which I have adopted, will be found to be simple and intelligible.

Some have supposed, from the tenour of the papers which have been published by me, that I deny the influence of the nervous system in the production of fever; but this is far from

being the case. It would as soon occur to me to question the laws of gravitation. I have always maintained the strict connexion between the vascular and nervous systems, in producing and keeping up febrile and inflammatory diseases.

There can scarcely be a doubt that a disordered state of the functions of the brain, and other parts of the nervous system, occasionally gives rise to febrile action. It is impossible to deny to the brain, as an organ, that it may be disordered, like other viscera, in function as well as in structure. My ideas of fever may be summed up in the words of Dr Fordyce, one of the best and most original writers upon the subject. "A fever," says he, "is a disease that affects the whole system; it affects the head, the trunk of the body, and the extremities; it affects the circulation, the absorption, and the nervous system; it affects the skin, the muscular fibres, and the membranes; it affects the body, and affects likewise the mind. It is, therefore, a disease of the whole system in every kind of sense. *It does not, however, affect the various parts of the system uniformly and equally; but, on the contrary, sometimes one part is much affected in proportion to the affection of another part**."

It appears to me, that certain points closely touching this question are admitted by all those whose opinions are of any value, although they have been called by different names.

1*st*, That the functions of almost all organs are embarrassed in fever from the very beginning, and often before the sense of cold is felt by the person himself.

2*dly*, That the blood leaves the surface of the body, and becomes congested in internal organs, and that, unless they are overwhelmed, the system makes an effort to relieve herself, which is called *re-action*, and certain combined phenomena take place, which are designated by the name of Fever. A question has arisen to determine by what means this is effected. There can be no doubt that it is owing to the principles of life. There are two circumstances, in following which investigators have bewildered themselves; one is, the vain attempt to ascertain the first link in the chain of diseased action; the other is, the still more hopeless endeavour to dis-

* A Dissertation on Simple Fever, Part I. p. 27.

cover the principle of life, which perhaps no man will ever be able to unravel.

3*dly*, That inflammation of all parts of the body will give rise to fever.

4*thly*, That inflammation, although it has no share in the production of a fever, may become lighted up during its course.

5*thly*, That the nervous system is involved as much as the vascular; and, if all these things be true, it follows as a consequence that the blood itself must be altered.

This outline of my opinions must suffice at present,—it will be best filled up when treating of the pathology of individual fevers,—when an attempt will be made to account for the discrepant histories which have been given of fevers, and for the opposite practices which have been recommended by different authors.

SECTION II.

Division of Fevers.

Fevers have been divided into various kinds. Dr Mason Good has four grand orders, thirteen genera, and each genus has species. This is a very erroneous plan in writing as well as teaching; for every individual case has some peculiarity, no two cases being exactly alike; so that this very learned author might with as much propriety have made many millions of species.

Cullen has divided fevers into Intermittent, Remittent, and Continued, and this last is subdivided into Synocha, Typhus, and Synochus *. None of the arrangements which have been hitherto laid before the profession meet my views. I shall therefore proceed to describe the plan which I have followed in teaching for some years, and wish to pursue in this work.

1*st*, Intermittent Fever.

2*dly*, Remittent, or Yellow Fever; Infantile Remittent.

3*dly*, Continued.

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* As no practical advantage is to be derived from the employment of the terms Adynamic and Ataxic, I shall not use them.

This class is subdivided into,

1*st*, Fever from simple functional derangement.

2*dly*, ——— from inflammation.

3*dly*, ——— from congestion.

4*thly*, A mixed form of fevers between these last three, but in which congestion predominates at last, commonly denominated Typhus and Synochus.

4*thly*, Hectic fever.

5*thly*, Fevers attended with eruptions:

This class is subdivided into,

1*st*, Scarlet fever.

2*dly*, Measles.

3*dly*, Small pox.

4*thly*, ——— modified.

5*thly*, Chicken pox.

6*thly*, Miliary fever.

7*thly*, Roseola.

8*thly*, Urticaria.

6*thly*, The plague.

Idiopathic fevers have not been mentioned. I consider it a most unhappy term, and no medical man with whom I am acquainted can give a satisfactory definition of it; it seems to be beyond the pale of pathology, for it has neither nature nor seat. It is defined by some to be a fever without a cause *. Fever is alleged to be a certain combination of symptoms, but it cannot be said that this is the disease. The symptoms are to be regarded as evidences of a diseased condition of some part or parts of the system; whereas, those who speak of idiopathic fever, will be found very frequently to do so, either from habit, or from a dislike to change terms, they themselves having a particular meaning for it. But the schoolmen who are in the habit of using this term, I verily believe, do so from an erroneous impression that the symptoms are the disease, and it is understood that some of them even go the absurd length of treating of Idiopathic Hectic!

* The fevers which are said to be idiopathic, are "Intermittent, Continued, and Exanthematous."

SECTION III.

General description of the phenomena of Fevers.

The following are Cullen's definitions of febrile diseases, and of fever:

First, of Pyrexia.

"After shivering, succeed a quick pulse, increased heat, with interruption and disorder of several functions, diminution of strength, particularly of the joints."

Secondly, of Fever.

"After languor, lassitude, and other signs of debility, pyrexia, without any primary local affection."

There are the strongest objections to all definitions. The following may be urged against the two above quoted; they are symptomatical definitions, and it is well known by physicians of experience that the symptoms vary much according to constitution, climate, and habits of living. They vary even in different individuals belonging to the same family, and during the same epidemic. The symptoms also develope themselves in various degrees; one, when exceedingly severe, frequently conceals or disguises the others. A definition, to be useful either to the student or the young practitioner, should embrace such phenomena as are peculiar only to that particular disease,—phenomena which may be said to be pathognomonic of the affection. As has been already stated, there is no case of fever, or indeed of any other disease, which has not some peculiarity that distinguishes it from another; in truth, the symptoms have a very wide range of character. A definition, giving a sketch, not of the symptoms, but of the *nature and seat of the disease*, would be a most useful introduction to the practice of physic; but pathology, unfortunately, is not yet sufficiently advanced to enable me to adopt such a plan in the course of this work.

It may be asked why Cullen, in his definition of fever, has taken no notice of pain in the head, and in the loins, of oppression at the præcordia, of nausea, want of appetite, thirst, and the state of the tongue? The reason appears to me to be evident; the mention of these phenomena would have led to the suspicion of *local affection*, which was contrary to his own dogmas.

"Fever," says Dr Fordyce, "of all other diseases, is that one in which a pathognomonic symptom is least to be depended upon; that is to say, an appearance which does not take place when there is no fever, or a fever does not take place when there is no such appearance *."

Febrile diseases sometimes commence without any rigour, and may go through their whole course without any unusual heat of skin, quickness of the pulse, or thirst. The rigour is not always followed by increased heat. Languor, lassitude, and other signs of debility, are symptoms common to almost all diseases, and therefore should not be ascribed to fevers in particular.

It is impossible to give a good general account of the phenomena of fevers, because they vary every day in the course of the disease. The symptoms which appear in the accession of fever, differ from those which manifest themselves in its progress; and these again from those which are observed in the decline and termination. These differences have given rise to a division of every fever into stages:

1*st*, That of accession.
2*dly*, ——— increase.
3*dly*, ——— declension.
4*thly*, ——— collapse.

These have been differently named; the first has also been called the stage of oppression and depression; the second, that of re-action; the symptoms occurring in the third and fourth stages have too frequently been called typhoid.

The symptoms also vary according to the organs chiefly affected. In some cases there are decided head symptoms, from the very beginning, indicated by headache, intolerance of light and sound, *tinnitus aurium* and delirium, or stupor with low muttering delirium, &c. In other cases the viscera of the thorax are principally affected, indicated by dyspnœa, cough, expectoration, and tightness in the chest. In a third set of cases, some of the viscera of the abdomen are implicated, announced by nausea or vomiting, uneasiness increased on pressure, diarrhœa, a foul state of the alvine evacuations, discovered both by the appearance and odour of the stools; a tympanitic state of the abdomen, and the peculiar

* On Simple Fever, Part I. p. 7.

appearances of the tongue. Sometimes there is a combination of these, and occasionally in the course of the fever there are evidences of sub-acute action in all the three great cavities, and this is what occurs in the worst forms of yellow and malignant fevers.

In all fevers every organ is in general embarrassed in its actions, so that there is the best proof of universal functional disorder, and the appearances on dissection warrant the statement which has been given above. True it is, that we now and then, on examining the body of an individual, find no decided morbid appearance *. This is by no means peculiar to the practice of physic; for, in that of surgery, people sometimes die after capital operations, where there has been no loss of blood, and no organic lesion found upon dissection, to explain the cause of death. They are said to die from the shock, by which term I understand that the principal functions of the body become suddenly impeded to such a degree that life can no longer be carried on. In the same way, in fevers, individuals die before any alteration of structure has taken place; from peculiarity of constitution, they cannot stand the shock produced by the embarrassment of so many organs in the performance of their functions; and farther, many individuals cannot bear the remedies which have been thought necessary for the subduction of the disease.

Some cases of fever commence with shivering, quickly followed by increase of heat and other symptoms of pyrexia, and terminate in a few hours, after considerable suffering, by copious perspiration; this is the simplest form of fever, and is termed Ephemeral; but when there is a regular succession of paroxysms, it is called Intermittent.

Other cases commence in the same manner, followed by heat of skin, &c.; continue for a day or two, when the symptoms decline; and there is sometimes a state of complete apyrexia, which continues only for a short time, when they recur with perhaps increased violence; this kind of fever has

* This is seldom the case, however. The only places in which pathological investigations can in general be conducted with due care and deliberation, are public hospitals, and it is shameful to see the indifference which prevails. If a physician has the ability, he is too much occupied, and some, unfortunately for science, have neither the ability nor inclination.

obtained the name of Remittent. When the skin becomes yellow in its course, it is called the Yellow Fever. When it occurs in infancy and childhood, it is called "Infantile Remittent."

Another kind of fever goes on for days, or weeks, without intermission, and is therefore called a Continued Fever. And it has several varieties.

First variety.—An individual feels his appetite impaired, his bowels out of order; his urine is perhaps scanty and high coloured; he soon passes restless nights, and at length is sensible of increased heat of skin; towards morning he falls into a gentle perspiration, and enjoys a few hours sleep, from which he rises somewhat refreshed; he finds his tongue loaded, his breath is more or less fœtid; he feels unwell, but still he is able to pursue his ordinary affairs. In the course of the day he is sensible of frequent slight chills, and flushes of heat; he becomes rather languid, has a little headache, but hopes to be better after dinner; he returns home, and although he has no appetite, forces himself to eat and drink, and passes rather a worse night. This goes on for several days, till at last he shivers pretty severely, and feels so much oppressed that he is compelled to take to his bed. Then for the first time medical advice is sought: the physician can find no symptom which can be attributed to inflammation; there is considerable restlessness, but no great degree of suffering, except that which proceeds from a sense of oppression in the præcordial region, fulness in the stomach and bowels, and pain in the loins; the appetite is gone, and the individual loaths food of all kinds, but has considerable thirst. The mental faculties are quite sound, but there is perhaps slight alienation during the night. Abstinence from solid food, and a steady perseverance in gentle laxative medicines, soon produces an amendment. This is precisely what I have denominated a fever from simple functional derangement.

Second variety.—A person is sometimes seized with a shivering more or less severe, which is followed by severe pain in the head, chest, or abdomen, accompanied by considerable heat, thirst, full strong pulse, and every symptom which announces a sub-acute attack of some structure, within one or other of the three great cavities; and this is what all writers

term a pure inflammatory fever. But when the inflammation of any part runs high, it is then said to be an inflammation of a particular tissue or organ. It must be recollected, however, that inflammation of every internal organ may go on to a fatal termination without any of these high-toned symptoms.

Third variety.—Another individual, without being sensible of any previous decided complaint, may be suddenly seized with shivering; the sense of coldness soon becomes intolerable to him; he is unable to support himself in a standing or even in a sitting posture; his intellectual faculties are soon observed to be impaired, his features shrink, a deadly coldness gradually spreads over the whole surface of the body, his pulse sinks, he makes no complaint, and he soon dies without the appearance of any of the symptoms usually termed febrile. This is a form of disease which is certainly not very frequently met with in this country, but which is often seen in warm climates, and it occasionally attacks women in child-bed. This is the purest example which can be given of what has been termed congestive fever *, but it is not that form of it which we most frequently meet with in these latitudes, where it generally developes itself in the following manner:—A person, after feeling more or less unwell for some days, or perhaps for some weeks, experiences chilly sensations, and slight attacks of heat; he is disposed to sit over the fire; he feels weak, and after being in this situation for some time longer with alternations of heat and cold, the cold predominates to his sensation, while another person upon touching his surface would pronounce him to be hot; but upon minute inquiry it will be found, that his extremities, more particularly the hands and feet, are cold; he makes little complaint, and is often thought to be asleep, when in fact he is comatose. Occasionally, however, the head is quite free, and he suffers from slight dyspnœa, and is unable to take a full inspiration, but he has no pain. The tongue is generally moist, sometimes loaded and white. The pulse is soft, sometimes quick,

* This is the form of fever which occurs in Rome and other places where Intermittents prevail, and termed *fièvres intermittentes pernicieuses*, and whose pathological elucidation has been so fully carried out by M. Bailly.

at others not above the natural standard. Even when to all appearance he is in a complete state of coma, he can be roused, when his expression of countenance will be vacant, and he will altogether look as if he were in a state of intoxication. If questioned as to what he complains of, he will answer he complains of nothing, or he will move his hand towards his head, or place it on his breast signifying some uneasiness, but he quickly falls into a comatose state again.

Fourth variety.—The next form of fever of which it is my duty to give a sketch, is that in which the patient is seized much in the same way as in the last described case. He complains, however, from the first of pain in his head, chest, or abdomen; he has frequent attacks of chilliness followed by heat; he has symptoms characteristic of diseased action in the brain, lungs, or abdomen. But this state is quickly succeeded by more or less insensibility, slight delirium, rapid weak pulse; the surface of the trunk of the body feels burning hot, while the extremities are rather cool; the delirium which manifested itself only during the night, now becomes permanent; it is not of the furious kind, but that which is appropriately termed "low muttering delirium;" the tongue, which was moist for the first few days, is now observed to be dry and glazed; he passes his urine and feces in bed; he is always found upon his back, and however often he may be moved, he will shrink down again towards the foot of the bed, which is a sign of most complete prostration of strength, and perfect helplessness, and is a bad symptom in almost any disease. In this state it is impossible to rouse the patient, and it may also be evident that he is quite blind; his pulse is quick, and so weak as scarcely to be felt, while the action of the heart may yet be very strong, and a considerable pulsation may be felt in the carotids or abdominal aorta. Few patients recover when the symptoms are so very severe as those just described, but they do not die sometimes before the end of the third week.

Occasionally in this form of disease, instead of the cold predominating, there is considerable heat, and the symptoms are pretty sharp, but at the termination of a few days, the symptoms become such as have just been described.

This is the form of disease which is generally called Typhus. But when the symptoms run very high at first, and sub-

sequently become low, then it is usually called Synochus. And this is precisely the form of disease which will fall to be more particularly described hereafter, under the denomination of "*a mixed form of fever*," for want of a better appellation. The term Typhus is objectionable, because it is sometimes used to denote a malignant, or a putrid fever; at others, the term is employed to signify a nervous fever. The term Synochus is also objectionable, for this reason, that although it is stated to be of an inflammatory nature at first, still there is a subsequent union with a typhoid state of the system; and we are told that the appropriate remedies for inflammation are not to be employed, from a dread of typhus, which must inevitably follow.

The term Hectic fever, is used only to signify febrile symptoms consequent to some previous disease, and some restrict it to symptoms which are produced by the formation of pus in some organ or tissue; in fact, whatever doubts have been entertained with respect to the nature of all other fevers, this is almost the only one which is universally allowed to be symptomatic.

It is considered unnecessary to offer any explanation in this part of the work respecting the fifth class, Fevers attended with eruptions; or the sixth, the Plague.

SECTION IV.

Causes of Fever.

It is now necessary to treat of the effects produced by certain circumstances on the human body as causes of fever; these are marsh miasm, contagion from human effluvia, and epidemic influence. These causes, together with cold, fear, &c. are called in medical language remote; but I shall continue to employ the terms common and specific. Cullen resolves all remote causes into sedative, in order to support his dogma of debility; he could not consistently allow a cause of a stimulating nature. Marsh miasm, he supposes capable only of producing intermittents and remittents, and he restricts the term contagion to human effluvia, capable only of producing continued fevers. He considers the common causes scarcely

to be capable of producing fevers by themselves. Some authors, again, assert that there is only one species of infectious matter peculiar to all fevers.

No one who has attended to this subject, can deny the influence of contagion, and marsh miasm, on the human body; but I conceive that too much has been attributed to them, and too little to the state of the constitution previous to seizure, and also by far too little to the common causes of fever. A weighty argument in favour of contagion, is sometimes drawn from the well known fact, of fevers spreading not only from one to another in a family, but also in the same tenement; but the circumstances under which they are placed should not be forgotten, as being likely of themselves to give rise to disease. The anxieties, the hopes and fears, which alternately affect individuals attending others whom they love, the exposure to cold and fatigue, the night-watching and want of rest, the irregularity in taking nourishment, and the neglected state of the bowels, all tending to produce loss of balance in the circulation, will go far to account for a number of individuals in the same family being affected, the one after the other, with a fever. Neither should it be forgotten, that all these individuals residing in the same locality, and living in the same manner, may have been exposed at the same period with the person first affected, to the miasm or epidemic influence, or some of the common causes which will produce fever. Why one individual should be sooner attacked than another, and have the disease perhaps more severely, it is difficult to determine. An interesting question here arises,—What length of time does the contagion remain latent in the body, before it shows its effects? It is, in truth, an intricate question, and one which has never been satisfactorily investigated. Some say it can only be for a few days or weeks, while others state with great confidence, that it may remain many months. Dr Gregory used to assert, that contagion might lie frozen for any length of time, and resume its virulence upon being thawed. There are other interesting facts, which are not sufficiently attended to in considering this subject. It is my belief, that contagion will not produce fever, if applied a thousand times to a person, if he is in a good state of body and mind.

Dr Gregory used to state, that he must have been exposed to the influence of contagion some 20 or 30,000 times, without affecting him once. The contagion of fever, to produce its effects, must be applied to a person ill fed and clothed, or to one whose stomach and bowels are in very bad order, or who is labouring under the effects of some mental depression.

From the evidence before us in the records of medicine, it appears that individuals residing in low marshy countries, are peculiarly liable to the form of fever which has been termed intermittent. The air of a marsh, however, differs not in its chemical properties from that of the most salubrious situations, and it supports combustion, therefore it cannot, as some have supposed, be deprived of any of its oxigen. If its constitution were changed, it would affect all who breathed it, blacks as well as whites; but this is not the fact, for there are very many people, who live in the centre of marshes for years, without once having intermittent fever. I have myself had many attacks of this disease during a residence in a marshy district, therefore it has been in my power to investigate this subject minutely, not only with regard to the phenomena of the disease and its causes, but also the sensations produced during the paroxysm. From personal observation thus acquired, the first circumstances which attracted my attention, were, that men were more liable to the disease than females, —whites than blacks,—the dissolute than sober steady-living men; and that agues were most prevalent at new and full moon.

Women are less liable to the disease than men, because they are rarely exposed to vicissitudes of climate, their habits are not dissipated, and they keep more regular hours. Blacks are less liable to this disease than whites, partly, no doubt, from the nature of their constitutions, but principally because they have neither the means nor the liberty to indulge themselves like their masters. But I am convinced that difference of constitution, enabling blacks to stand the climate better, has been very much overrated, and that diseases which destroy so many Europeans, are owing more to licentiousness than to the effects of climate. The dissolute are more liable to this disease than others, because they often expose themselves during the night, when the system is in a state of col-

lapse; and the disturbance which must be created and kept up in the functions of most important organs, by constant excesses, must not be lost sight of.

Moisture alone has a great effect in producing disease, and its influence is speedily observed on the mind as well as the body. But moisture alone will not produce intermittent fever, the influence of excessive heat must be superadded, and then there is a rapid evaporation from the earth's surface. It is this evaporation, I imagine, which is productive of so much mischief to European constitutions in warm climates, particularly where there is any tendency to collapse. Agues are not prevalent during the rainy season, when the surface of the earth is more or less covered with water; but they become so after the dry season sets in, when it is alleged "the sun acts upon the soil itself, producing deep rents, whence it is supposed the miasm emanates." This, however, can be more satisfactorily accounted for in a different manner.

During the rainy season, white people take greater care of themselves, and are less exposed; the sun is obscured from the eye by dense humid clouds; there is a pretty constant deposition of moisture, but little or no evaporation. The sun's influence becomes very great when the rainy season ceases, and the extent to which evaporation goes on, exceeds all belief.

Dr Fergusson has observed, that "the same rains which made a deep marshy country perfectly healthy, by deluging a well-cleared one, where there was any considerable depth of soil, speedily converted it, *under the drying process* of a vertical sun, into a hotbed of disease."

With regard to the apparent influence of the planetary system in intermittents, it must be observed, that in localities where this disease generally prevails, the surface of the earth is rather below the level of the sea at high tides; so much so, that to prevent inundations, dikes are thrown up. At new and full moon the tides rise, the marshes become covered with water, the drains become charged, and the daily effects of evaporation produce the disease.

Some have attempted to account for the occurrence of remittent fevers by the effects of excessive heat; but I believe that heat alone, unless the temperature is very high indeed,

will not produce fever in any climate, unless moisture be superadded, or sudden vicissitudes of weather take place, when the thermometer will suddenly fall between twenty and thirty degrees, as I have myself observed in unhealthy seasons.

It will be seen that it is not my intention to deny the existence of some invisible substance which may be suspended or mixed with the air of the atmosphere, and which may produce intermittent fever *. A fact may be mentioned on this side of the question, which must carry considerable weight with it. It has occurred to me to see a good deal of intermittent fever in situations far remote from marshes, but in every one of these instances the individuals had been at some period of their lives in marshy districts; yet it is certainly very strange that some of them never had a paroxysm during the period of their residence in these places, and not till months, and in some instances years, had elapsed.

Some contagious diseases are capable of being communicated from person to person, by breathing the air in the apartment where the sick person is confined; others require that actual contact should take place; and some diseases are capable of being communicated in both ways. In the plague, it would appear that actual contact with the affected individual, or with his apparel, is necessary; whereas in small-pox the contagion may be received merely by coming into the same room, and it is also capable of being conveyed by inoculation. Contagious diseases spread slowly from one to another, and from house to house, and may often be confined, by proper precautions, within a circle, where it will attack all, or almost all, who are exposed to the contagion, particularly those who have not had the disease before.

When a disease is said to be epidemic, it is understood that we mean one which is produced by a certain state or condition of the atmosphere at present unknown, and which has baffled the exertions of every one who has entered upon its investigation. The term implies that a great number of people are suddenly

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* Some writers go the extraordinary length of speaking of the specific gravity of Marsh Miasm.

seized at the same period. An epidemic, after continuing for a longer or a shorter period, also suddenly ceases, at a time, perhaps, when the greatest number of patients are affected with it. These are facts which appear to have confounded those who assert that yellow and other fevers are invariably contagious.

It does not appear to me that intermittent fever is ever contagious; but that the yellow fever, and that which has been termed Typhus in this country, are so, under particular circumstances, in a very high degree; observation has induced me to conclude, however, that this cause of fever has also been very much overrated.

Vitiated air *, and the effluvia which proceeds from the bodies of individuals crowded together in jails, hospitals, and ships, have been abundant sources of fever; and this is not confined to the human species. Dr Fordyce mentions instances where sheep and hogs were attempted to be transported, during the American war, from England to America, in the holds of ships, in which many were confined in a small space; an infectious fever frequently broke out among them, destroying great numbers.

History affords many melancholy examples of the baneful effects of vitiated air and human effluvia, and the speed with which they destroy animal life. The best example is to be found in the occurrence which took place last century in the black hole at Calcutta. One hundred and forty-six unhappy individuals were forced into a dungeon, about eighteen feet square, at eight o'clock at night, and at six next morning, when released, only twenty-three came out alive; most of these were in a high putrid fever, and subsequently died. The bad effects, we are told, were felt in a few minutes after they were shut up. Before the expiration of an hour, their thirst is described to have been intolerable, and their respiration difficult. Before eleven o'clock, one-third of the whole were dead.

It comes to be an interesting question, but one too exten-

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* It is to be regretted, that the term *Malaria* is not restricted to foul air, according to its literal meaning.

sive for this work, How contagion propagates itself, and to which part of the body it is first applied. In this inquiry, we shall be much assisted by the circumstances which are observed to take place after inoculation with small-pox. My own opinion is, that the mucous membrane of the lungs is one of the first parts in which the diseased action is to be detected; and careful observation has induced me almost to believe, that in diseases produced by contagion, the bronchial membrane never escapes.

Fourcrois tells us, that in several of the burial-grounds in France, in which the graves were dug up sooner than they ought to have been, the persons employed have occasionally been asphyxiated; those who were standing at a little distance, were often affected with vertigo, fainting, nausea, loss of appetite, &c. History also affords us various remarkable instances of the occurrence of diseases decidedly epidemic: the most ancient are those which will be found in sacred writ, in which we find, that on one occasion seventy thousand persons were destroyed by pestilence in three days' time; and we are also told, that one hundred and eighty-five thousand persons were destroyed in the Assyrian camp in a single night. The most remarkable epidemic of modern times, is the cholera of the East, which extended itself in the very teeth of tempestuous winds.

Pythagoras first started an opinion respecting critical days, and he had an unlimited belief in the occult powers of certain numbers. Hippocrates seems to have entertained the same opinions. It is an essential part of the old doctrines of concoction, and it was supposed that a separation had a tendency to take place on one of the critical days, by a discharge, as from the skin, bowels, kidneys, or blood-vessels.

I have myself no belief in the influence of critical days, although I admit that the crisis frequently takes place in one of the ways mentioned.

When one organ is diseased, there is a constant action in the system to throw it off: it is, in truth, one of the great principles of life, and it is effected by a determination of blood to another organ, or a discharge of blood takes place, generally from the vessels of the nose.

From the time of Hippocrates, it has been believed that fevers had a tendency to remit on the 3d, 5th, 7th, 9th, 11th, 14th, 17th, 20th days, and even the 21st. Many modern physicians have adopted this doctrine; but I doubt much whether it has not been more injurious than beneficial in the treatment. Often may physicians be seen prescribing a placebo, because the critical day is approaching, when they ought to be actively employed in eradicating the disease. When attending to this point, I have very often found the calculations made erroneously; and not unfrequently, in attending the same case, I have seen physicians disagree as to which was the proper critical day—one calculating from the period when the rigour took place—another from the period when the heat of skin occurred—and I have seen a third calculation made from the time when the patient confined himself to bed. There can be little doubt, that fevers and other diseases have a tendency to run through a regular course, and in many cases a natural cure is performed, which very generally takes place upon the occurrence of an eruption, or of some discharge, as by diarrhœa, copious perspiration, flow of urine, expectoration, &c. It cannot be denied, however, that in some diseases there is a strong tendency to periodicity, but far more so in the accession than termination. Thus, in intermittent fever, the attack may come on regularly at the usual period, but each stage may occupy a shorter or a longer space of time in one paroxysm than another. Sometimes the individual dies in the cold fit, but much oftener the hot fit is not relieved by sweating, and his disease is a continued or remittent fever, or inflammation of a particular organ takes place. But it is of little importance whether the doctrine of critical days be true or false, if the physician acts wisely, and neglects nothing which can tend to reduce the diseased action.

INTERMITTENT FEVER.

This is the simplest form of fever. It is composed of three stages, beginning with a cold fit, followed by heat, and terminating in profuse perspiration. It has been known from the

earliest ages, and is most prevalent in some parts of North and South America; the Pontine marshes near Rome; in Holland; and in England, in the fens of Lincolnshire and Cambridgeshire in particular. We are told, that in the sixteenth century, it was very prevalent, and proved fatal to a great number of people in London; and in the year 1558 Intermittents raged like the plague, and were also very fatal; but it has become less frequent in Great Britain, which is to be ascribed to the increased comforts of the people, their habits of cleanliness, and to the improvement which has taken place in the climate, owing to the draining of lands, and increased cultivation of the soil. It has been stated, but without foundation, that a miasm producing intermittent fever is generated in London in the neighbourhood of St James's Park. It is a complaint of very frequent occurrence in all warm countries, and is one of the purest specimens of a disease depending upon an irregular determination of blood, in which the system is generally relieved by the unaided powers of the constitution.

Cullen's definition, "Fevers arising from marsh miasmata, consisting of many paroxysms, with intermission, or at least with evident remission intervening, returning with remarkable exacerbation, and in general with shivering; one paroxysm only in a day."

We are here told as little as it is possible of the disease. Nevertheless most people think this definition a model of excellence. Paroxysms of intermittent have taken place from sudden change of atmosphere in situations where no miasm ever existed; and the most severe cold stage which ever came under my notice, and which lasted twenty-six hours, was produced by exposure to frost after the individual had got wet on the top of a coach. Mr John Hunter informs us, that two children had ague from worms; they took bark, but it did them no good; but the worms were destroyed, and they got well. We have in like manner, says he, agues from many diseases of particular parts, more especially of the liver and spleen, and from an induration of the mesenteric glands. Many instances of Intermittent Fever are also recorded from repelled eruptions, the drying up of old discharges, as well as from the application of cold.

Sir George Baker has given an account, in the Medical Transactions, of an Intermittent that prevailed in 1780; it affected the inhabitants who lived in the higher parts of the country, while those in the marshes escaped.

Sir Gilbert Blane likewise informs us, that while the village of Greenhythe, nearly on a level with the marsh at Northfleet, is unaffected with Intermittents, the adjacent hills suffer considerably from them.

There are usually reckoned three kinds of Intermittents, the Tertian, the Quotidian, and the Quartan. But they ought all strictly to be regarded as the same disease, with a longer or a shorter interval; and the one frequently runs into the other. We often, however, see a double Quotidian. The longer the interval, the more severe is the paroxysm, and *vice versa*. Tertian is employed to express that form of disease in which there is an interval of forty-eight hours from the commencement of one attack to that of another; Quotidian twenty-four; and the Quartan seventy-two.

SECTION I.

Phenomena of Intermittents.

It is a well known fact, that after an individual has had an attack of Intermittent, he is afterwards more liable to the disease, and he is sensible of its approach some time before any one could suspect he is ill; the toes and the last joints of the fingers feel cold and benumbed, and his nails have a blueish colour; he has sensations of languor, and long fits of yawning; occasionally at this period there is headache, sometimes stupor, with pains in the back and loins.

Cold Stage.—When the paroxysm actually commences, the patient feels the extremities cold, with a sensation as if a small stream of very cold water were flowing down the spine, which extends itself to the thorax and abdomen. There is a great desire for warm drink, and to cover himself with as many bed-clothes as he can procure; the prostration of muscular power is considerable; the sense of cold very soon becomes insupportable; the teeth chatter, and there is an universal tremor over the body: and if I can trust my own sensations, and the accounts I have subsequently heard from others, the

tremors affect internal as well as external parts. These tremors sometimes terminate in convulsions. The respiration is always laborious, short, and hurried, and the individual is quite unable to take in a deep inspiration when desired; a short hard cough frequently attends, without expectoration; there is great oppression at the præcordia. Some individuals complain most of headache, others of pain in the back, in the lumbar region and lower extremities, and others of universal pain. In almost all cases the patient is incapable of attending to any thing. Sometimes there is stupor, and at others delirium. The features are much shrunk and pale; the eye looks hollow, and loses its brightness, while the cheeks are more or less of a livid hue. The pulse is oppressed and weak, sometimes slow, at others quick, and it frequently intermits; but the violence of the tremors renders it often impossible to feel the pulse distinctly. The tongue is moist. It is a curious circumstance, that while the patient complains of intense cold, the heat of the body every where, except in the extremities, is sometimes above the natural standard, the heat of the surrounding atmosphere ranging between 80 and 100.

The paroxysm occasionally comes on without any rigor, instead of which the patient feels merely a sensation of cold which is sometimes very slight; at other times the paroxysm is announced by violent pains in the joints and loins, and occasionally by violent headache; and these various forms are called by the vulgar the dumb-ague. Sometimes a patient falls into a profound sleep for several hours, and awakes in a violent hot stage. It sometimes happens, that at the next attack, instead of a regular paroxysm a violent pain comes on in the situation of the supra-orbitary foramen, and extends up the brow, affecting the nervous twigs of the frontal branch of the fifth pair. It continues for several hours, and seems to resemble the Tic Douloureux. Sometimes this form of Intermittent continues in the Quotidian or Tertian type for four or five paroxysms, and then ceases. But it would be in vain to attempt to describe all the appearances which this disease occasionally assumes.

The duration of this stage is very various, rarely less than half an hour, and seldom exceeding four.

Hot Stage.—After the cold stage has continued for a longer or a shorter period, the hot stage commences; the one gradually runs into the other, there being no distinct interval between them. The change is attributed by patients themselves to the treatment which has been employed, or to the effects of vomiting which sometimes accompanies the cold stage. The skin becomes hot and dry, sometimes pungent; the face flushed and swollen; there are no tremors, they have given way as the sense of cold declined; the thirst now becomes urgent, the tongue parched; there is restlessness, general uneasiness, and oppression at the præcordia; the respiration is hurried and anxious; and, almost invariably, the patient complains of acute pain in some region of the body, generally in the head and lumbar region, very often also in the thorax, and left hypochondrium; there is frequently in this stage a slight degree of disturbance in the mental faculties, sometimes indeed delirium. On some occasions there are decided head symptoms, with tinnitus aurium, and throbbing of the carotids. The pulse is quick, sharp, and bounding, even in patients whose health and strength are much impaired.

I have seen the thermometer, the accuracy of which had been well ascertained, rise in the hot fit, even in this country, to 110°, and in warm climates it is stated to rise as high as 112°.

The duration of this stage varies more than the former one; in general it continues from four to twelve hours, and then terminates in perspiration; but on some occasions it continues for several days or weeks, when the disease is termed a continued fever; now and then there are marked remissions followed by exacerbations, and then it is called a remittent; —when, in addition to the two last-mentioned circumstances, there is considerable irritability of stomach, bilious vomiting, and a yellow tinge of the skin and eyes, then the case is termed a bilious remittent, or yellow fever.

Sweating Stage.—After the hot stage has existed for some time, it terminates in the sweating stage; the perspiration appearing first on the forehead, arms, and legs, soon becoming general and profuse. It is difficult to calculate the quantity of this excretion in any case; but it is admitted by all who have attended to the phenomena of intermittents, that

it is very great. From the moment the perspiration begins to appear, the uneasy sensations, and other symptoms above described, begin to subside, and after it becomes general, the patient feels easy *.

Individuals whose constitutions have not been previously injured, are able to resume their ordinary duties after the sweating stage has continued for two or three hours; the only unpleasant feeling they complain of is weakness; or they fall into a sound sleep, and continue in it for many hours, and awake quite refreshed.

When this disease continues for some months, the patient not only becomes weak, and loses flesh, but he has no interval of ease; each paroxysm increases his sufferings, and he feels comparatively little relief from the perspirations, which he often prolongs, in the vain hope of alleviating his symptoms. He complains of head-ache, and there are even sometimes decided head symptoms; or he has a cough and dyspnœa, which will almost always be found to depend on inflammation of the lining membrane of the air passages; or he has no appetite, complains of constant thirst, flatulency, constipation, or diarrhœa; griping pains in the bowels, with a dull pain and sense of weight in both hypochondriac regions, generally in the right; the skin is hot, and feels harsh; the feet and legs become œdematous; the urine scanty; the tongue dry at the tip, the rest of it being furred; he passes his nights in a restless manner; and perhaps in the very next paroxysm he may die epileptic in the cold stage; or the sweating stage does not succeed the hot, and he dies in a few days of continued or remittent fever; or decided marks of inflammation of the liver or lungs, but more frequently the former, take place, and he is cut off, from the effects of disorganization in these organs. Such circumstances are of frequent occurrence in

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* M. Andral, in the first part of his very excellent pathological writings, p. 477. mentions a very curious case. A young man, who had been hemiplegic on the left side of his body from his infancy, was attacked with tertian intermittent. He only perspired on that half of his body which had not been paralysed. He stated that in his best health he never perspired but on one arm and leg, and on one side of his face and neck.

warm countries, where intermittents prevail; many hundreds of melancholy examples will be found, by referring to the work of Sir John Pringle, but more particularly to Sir James Fellowes's reports of the destruction occasioned by this fever, which affected our troops employed in the expedition to Walcheren. The history of the fever which prevails at Rome, and which has been so ably and faithfully described by M. Bailly, also corroborates the above statements.

Intermittent fever sometimes attacks individuals when labouring under internal diseases, such as dysentery, hepatitis, &c., and I have frequently seen it come on when patients were beginning to recover from the remittent fever. It may be also mentioned, that I have seen enlargements of the parotid take place during the course of intermittents. The gland increases in size and hardness during each cold fit, and it seems, in the first instance at least, to owe its enlargement to sanguineous engorgement; subsequently the gland suppurates.

When intermittents have continued for some time, it is no uncommon circumstance for the lower extremities to become œdematous, and sometimes even ascites takes place. The first does not denote danger, but the last always occasions an apprehension of some organic lesion of an important viscus. Nevertheless, both may be occasioned by mere functional derangement. In these cases, the thirst is considerable, and the secretion of urine scanty, and sometimes dysenteric symptoms manifest themselves.

SECTION II.

Appearances found on Dissection.

I HAVE myself observed the following appearances in the bodies of those who died in the cold stage.—The vessels of the brain gorged with venous blood; and I have even seen the carotids, after passing into the skull, greatly distended with black blood.—The lungs so much congested, that they sink in water, of a dark colour; and this is the condition which is described by the older writers, by the term "putrid

state." It has not occurred to me, in the very few instances which have fallen under my own observation, to observe any structural disease in these organs; for, upon making sections of them, and squeezing them in water, they have resumed their natural appearance and buoyancy.—The heart, and veins near it, gorged with blood; and sometimes an effusion of blood, or bloody serum, into the cavity of the pleura. In the abdomen there are dark-coloured patches to be seen on the peritoneum, occupying a considerable extent of the intestinal tube; and, upon cutting through these portions, all the tissues are found highly injected, and it is probable that this appearance has often been mistaken for mortification.—The liver gorged with blood and discoloured; but when treated, like the lungs, in water, this organ is restored to its natural colour, unless it has been altered in its structure by previous diseased action, when it is easily broken down, like coagulated blood. I have seen the spleen in the same state; but was not able, by washing, to restore it to its natural appearance. The stomach and intestines contained, in one instance, a dark, sanguineous looking matter, like the black vomit, which I believe is a secretion from the vessels of the mucous membrane, which are also found gorged here and there.

The following dissection is copied from the work of M. Bailly; the subject of it died in the cold stage. The examination was made three hours after death.

"The small intestines, slightly distended with gas, were externally of a purplish red. The internal membrane was of the same colour, so that the violent injection, of which they were the seat, had existed throughout the whole thickness of the substance of the intestine. This injection was recent. Inflammation of the upper half of the cæcum. The whole of the great intestine was white externally; on being opened, it presented an inflammation, the violence of which was greater towards the rectum; and there the mucous membrane was so violently inflamed that some blood had been exuded, which, mixing with the mucus, formed a coating, very consistent, which adhered to the whole of its surface. The colour of all the interior of the colon, and especially of the rectum, was of a lively, intense red; in a word,

it is the most violent degree of inflammation that can exist without disorganization. The stomach was pale; after being washed, it presented, on that portion of its great curvature which was near the pylorus, an infinity of little depressions, from half a line to a line in diameter, and some of which contained in their bottom a small spot of blood, which was easily removed. The folds of the mucous membrane were, besides, nearer each other, and more numerous than ordinary. The mucous coat itself was thickened. The liver was healthy, the spleen large, and pretty hard, but of a redness of the lees of wine. Slight adhesions of the right lung; the same between the whole surface of the heart and pericardium; they were easily destroyed. Injection of the arachnoid; engorgement of the vessels which ramify on the convolutions, and of those which compose the choroid plexus."

In giving a description of the ordinary appearances found in the bodies of those who have died from the continuance of Intermittent Fever, it is unnecessary to go so far back as the time of Pringle or Cleghorn; but I shall give a sketch of these appearances from the excellent work of M. Bailly, who went to Rome in the sickly season, apparently for the express purpose of investigating the nature and seat of this disease.

In the head he found traces of disease, more or less extensive, in thirty-three cases; in twenty-two of these there was thickening, and other marks of inflammation, in the arachnoid coat; and in eleven, inflammation of the substance of the brain. In twenty cases there was gastro-enteritis. In four cases gastritis by itself, and also four of enteritis, uncomplicated with gastritis. In eleven the spleen was softened; in some instances enlarged; one weighed from two to three pounds, and another from eight to ten pounds. In two cases the spleen was large and hardened. In three cases the spleen was ruptured, and in one it was engorged with blood. In two cases the liver was softened; in four engorged with blood; and in one case inflamed. In one case the gall-bladder was inflamed. In two cases there was pericarditis. In three, peritonitis. In one, pneumonitis. In one case there was inflammation and enlargement of the parotid.

These statements respecting the appearances on dissection,

in Intermittent Fever, will be found fully corroborated in the works of Morgagni, Sir John Pringle, Cleghorn, Chisholm, and Sir James Fellowes.

SECTION III.

Causes of Intermittents.

In point of form, I ought now to treat of the causes of Intermittent Fever, but having explained myself so fully on this subject, when treating of the causes of fever in general, at page 44. it is unnecessary to do so in this place, further than to repeat my conviction, that the effects of internal irritations, and of cold produced by sudden vicissitudes of climate, during very hot weather, and more particularly of evaporation, as causes producing Intermittents, have hitherto been too much overlooked.

SECTION IV.

Pathology of Intermittents.

As there are three distinct stages in this disease, it will be better to treat of the pathological condition of the body during each.

Cold Stage.—For aught any one knows, the first link in the chain of morbid action may be in the nervous system; there is decided evidence of its being involved from the beginning to the termination of the disease. But as there is nothing to guide us in the investigation, I shall not enter into it, having resolved to avoid fine spun ultimate causes, which I confess I could never understand. But the first thing which we perceive, is diminished circulation of blood in the extremities, then a sense of coldness, and with it a feeling which is ascribed to weakness. These are evidences of an irregular determination of blood, by whatever cause produced; and in proportion as internal organs become congested *, their functions are im-

* This term simply implies, that the balance between the arterial and venous system is lost for the time, the latter being overloaded or con-

peded. The lungs shew their gorged state, by the short, difficult, and anxious breathing; the impossibility of inflating them beyond the least degree; and by the violent dry cough which occasionally takes place. The livid appearance of the cheeks, lips, and mucous membrane of the mouth, is an additional proof of the embarrassed state of the lungs, shewing that the blood is not properly de-carbonized. The disordered functions of the brain in this stage, depend, I imagine, principally upon this state of the lungs, and also upon the overloaded state of the right side of the heart, preventing the free circulation from the head. The disordered functions of the brain may also certainly be produced by a change in the balance of the circulation of the vessels of the head, independent of the state of the lungs and heart. The universal feeling of prostration, is the consequence of these morbid conditions. The tremors may probably be attributed to congestion of the spinal marrow. The sense of cold is owing partly to the state of the nervous system, and partly to the state of the lungs. The pain in the head and loins, and oppression at the præcordia, may be fairly attributed to the same causes. The muscular prostration, and feeling of sinking, are not owing to actual debility, but to obstructed action, in consequence of the above-mentioned condition of organs. The proof of all which circumstances is to be found in the fact, now well known, that abstracting blood, in the cold stage, will immediately remove not only the difficulty of breathing, the pain in the head and loins, the disordered functions of the brain, (when these exist,) the oppression at the præcordia, &c. but will also stop the rigors, restore the strength of the pulse, increase the heat of the whole body, and cause the sensation of cold to vanish.

By way of contrast, the pathological views which are still taught in most of the schools of Great Britain may now be stated, and this shall be done in the words of the late very celebrated professor of physic in this university, Dr Gregory:

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gested, and not that the circulation in any organ, or set of organs, is entirely obstructed, which nevertheless does actually happen in those extreme cases in which re-action does not take place, and the individuals die in the cold stage. I may add, it is a term not of modern invention.

" The languor and debility depend upon diminished nervous energy; the uneasy feelings, on muscular debility; the paleness of the face and extremities, and shrinking of the features, are owing to spasm of the extreme vessels; the coldness is to be explained by the blood being propelled from the surface by debility, or prevented from entering the vessels by the spasm: thus the cold may be produced either by the spasm or by the debility; the tremors depend upon debility of the muscles, but there is also some irregularity of nervous energy; the breathing during the cold stage is small, frequent, and anxious, owing to debility of all the muscles that serve for respiration, while, at the same time, the *congestion* of blood produced by the weakened action of the heart, would require the breathing to be often repeated, and the respirations to be fuller than natural, which circumstance tends to increase the uneasiness; the heart partakes also of the debility; this debility of the heart produces an accumulation of blood in the great vessels, and this occasions that unusual motion of the organs of respiration, termed yawning. Want of appetite, nausea, and vomiting, are owing to debility of the fibres of the stomach. Costiveness is produced partly by spasm. Failure of attention and memory, and also delirium, are owing to debility."

On perusing these statements, the reader will observe sufficient proof of the pathological condition of the body, which I have described, but instead of attributing it to the same state of organs, he places spasm and debility as the cause of each phenomenon; thus most unphilosophically, like the whole of the disciples of the Cullenian school, he makes the facts to suit the doctrines, not the doctrines to suit the facts. Influenced, as this distinguished man's mind was, by such erroneous pathology, it is no wonder that he should have pronounced the following dogma: " I have no doubt, therefore," said he, " that the causes producing fever, act first by inducing debility; and accordingly we find, that stimulants employed at this period have produced good effects in checking this disease, while evacuations, as *blood-letting*, which, at another period of the disease, might have been proper, if employed in the *first stage, never fail to be attended* with most dangerous

consequences; or it is, to use the words of Celsus, "*hominem jugulare* *."

Hot Stage.—Acting upon the principle of not inquiring into occult causes, very little need be said respecting the circumstances which produce the re-action; but it may be mentioned, that there is a pretty general belief that the blood accumulated about the heart, in the cold stage, proves a stimulus to that organ, thus producing re-action. In this manner Dr Gregory and others make the spasm of the extreme vessels the cause of the diminution of blood on the surface; and then he observes—"The blood thus driven upon the internal parts, must accumulate in, and prove a stimulus to, the heart and great vessels."

The next question comes to be, how this is effected? The truth is, that we know nothing of the matter; and, after all, it is best to attribute it to "*the principles of life*," or, in the language of Cullen, to the "*vis medicatrix naturæ*," which is ever in action, to prevent injury, and to remedy the evil after it has occurred. The phenomena which are ascribed to the state of re-action, are those, *the combination of which* is denominated fever; namely, hot and dry skin; quick pulse; thirst and loss of appetite; restlessness and anxiety; headache, and occasionally delirium; hurried respiration; dry, furred tongue, &c.

With respect to the heat and dryness of the skin, the old opinion of Boerhaave need scarcely be alluded to, who attributed this condition to the friction of the globules of the blood against the sides of the vessels; neither is it necessary to dwell upon the still older opinion, which attributed it to fermentation; nor is it requisite, after what has been previously stated in this work, to say a word more respecting spasm of the extreme vessels. The heat and dryness of the skin in the second stage of Intermittent are, no doubt, owing partly to

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* In the ninety-third number of the Edinburgh Medical and Surgical Journal, I have successfully traced the manner in which Dr Gregory was led into this error respecting Celsus; for it is a statement which Celsus never made in reference to the cold stage.

the suppression of the secretions and excretions; also, probably, to some change in the nervous system, but principally to the increased quantity of blood driven to the surface of the body.

Sweating Stage.—It has been stated that, in general, in cases in which no organic lesion exists, the pains and uneasy feelings begin to subside after the commencement of the sweating, and soon afterwards disappear. An interesting question here presents itself, How does the perspiration produce the effect? It appears to me that it acts in two ways; *first*, cooling the body by evaporation; and, *secondly*, it moderates the force and frequency of the heart's action, by depleting the system. It is impossible to state the precise quantity of fluid perspired in such cases; but, if I can trust the hasty, and, perhaps, far from accurate observations made respecting this point, by placing oil-skin on the outside of the bed-clothes, I am inclined to believe that it amounts to considerably more than two pounds; and it must be kept in view, that this discharge comes directly from the blood itself.

SECTION V.

Treatment of Intermittents.

It was formerly a matter of high dispute, whether or not an intermittent fever ought to be immediately cured, or allowed to run its course. Many believed that the system is benefited by the disease,—that the febrile symptoms, in fact, are the natural cure of some other evil in the constitution,—and they argued that the stopping of it is therefore hurtful. Some assert that the disease will cure itself; and therefore, that it is improper to apply any remedies, except laxatives, to keep the bowels open.

The best maxim in physic is, to get rid of diseased action as quickly as possible, as there is no saying what is to follow in the train of consequences. "There could not be a moment's hesitation," says Dr Fordyce, "in determining to restore the patient to perfect health at once, were there any remedy or mode of treatment that would certainly prevent the

returns of the paroxysms of a tertian intermittent, and take off the symptoms remaining after the crisis, so that no other disease should follow. But there most undoubtedly is o medicine uniformly efficacious, or that always leaves the patient in tolerable health, and secure of not being destroyed by the remains of the disease, or by any other disorder arising in consequence of it."—" Were there any such, why should different practitioners attach themselves to particular varieties of bark; recommending the brown, the yellow, or the red, with such decided preference? Why should they prefer arsenic or zinc, if any one were uniformly successful?"

The discovery of such a remedy has always been a great desideratum; and although no one remedy has yet been found out, I believe bleeding, in the cold stage, conjoined with the subsequent use of the sulphate of quinine, and laxatives, to be as certain a cure for intermittents, as any other set of remedies can be said to be cures for any other class of diseases.

The ordinary plan of treatment, however, shall first be detailed; and as the cold stage demands different management from the hot, and both of these from the sweating stage, and all these from the intervals between the paroxysms, I shall treat of the means to be used in each stage, and then describe the plan which ought to be adopted in the intervals, to prevent a return of the complaint. In the cold stage, which generally lasts from half an hour to two or three hours, the first thing to be done is to endeavour, by every means in our power, to restore the heat of the body, and to relieve uneasy feelings, with a view to shorten its duration, and bring about reaction. Hot applications; increasing the quantity of bedclothes; warm drinks; stimulants; opiates and æther, have been strongly recommended,—with how little success, every experienced man can testify. The best method of applying heat is, to surround the patient with bottles filled with hot water; and it affords considerable relief, when a sufficient degree of heat is applied to the epigastric region. It appears to be more efficacious than the general warm bath, in which I have seen a patient shiver, and complain loudly of the cold, when the bath was heated above 100°. It is a common plan to give a bumper of gin or brandy, with some pepper, to

create re-action, and cut short the cold stage; and there can be no doubt that it has sometimes succeeded; but I have seen much injury ensue in many cases. This enables us to account for the horror entertained by the older writers, against cutting short the cold fit, because it was never attempted by any other means than by ardent spirits, large doses of opium, and æther. Dr Gregory used to mention, in his lectures, two cases of violent epistaxis, which reduced the patients to great weakness, succeeding to doses of brandy and pepper. In the instances which fell under my own observation, and to which I have already alluded, violent head symptoms succeeded, and, in two or three instances, local inflammations.

Bleeding, in the cold stage, will, in a great majority of instances, cut it short; in fact, it will rarely fail in stopping the existing paroxysm, and, on many occasions, it has prevented a return of the disease to which the patients had been long subject, and by which they were nearly worn out. It is difficult to determine what quantity of blood it will be necessary to draw in any given case; sometimes it requires twenty-four ounces; I have known three ounces suffice, and, in one case, an ounce and a half produced the full effect. The better the vein is opened, the greater is the chance of destroying the disease at a small expense of blood; but, in many cases, the operation is attended with considerable difficulty, from the convulsive tremors which affect the whole body. I was once successful, by bleeding, in a cold stage which had lasted twenty-six hours. The blood sometimes only trickles down the arm, and, as the system is relieved, the stream becomes stronger and stronger, till at last it springs from the orifice, and before six ounces are taken, the patient will express the relief from violent pain in the head and loins. It will then be observed that he breathes more freely. The tremors become slighter and slighter, and, by the time a few more ounces are abstracted, they will cease altogether, and with them will vanish the painful sensation of cold. The pulse will be found stronger, and a gentle moisture will be observed on the body. If the patient is properly managed with respect to bed-clothes, neither hot nor sweating stage will follow. Most of the patients who have been treated

by myself, or by my pupils under my immediate inspection, have fallen asleep immediately after the operation; but some of them have even got up and dressed themselves *.

Cullen stated, that all the subsequent phenomena of fever depended upon the cold stage, which, although a mere hypothesis of his, is now for the first time proved to be true; but it must be recollected that fevers sometimes exist without any appearance of a cold stage, or even a sense of chilliness.

Several whimsical objections have been made against this practice; but as these have been refuted in my second communication on intermittent fever, in the ninety-third number of the Edinburgh Medical and Surgical Journal, they need not be repeated in this place. The bleeding appears to act by relieving the heart and large internal vessels from their state of engorgement, by unloading the lungs, and by removing the congestion from the venous system of the brain and spinal marrow; which is exactly what nature effects, but always at considerable risk, by the state which is termed re-action. That the practice is safe, I am warranted in stating, not only from my own experience, but also upon the authority of Dr Haviland, the distinguished Professor of the Practice of Physic in the University of Cambridge, who has tried it in several cases; of Dr Malden of Worcester; of Dr Buller of Cork; of Dr Buchan, inspector of army hospitals, and late physician to the Royal Infirmary of Edinburgh; of Dr Alison, in the clinical wards of the Infirmary; of Dr Cambridge, who saved the life of a gentleman on the Continent by this means, after bark and arsenic had failed, and who was so fully impressed with the value of the remedy, that he afterwards submitted himself to the operation on two different occasions. Dr William Stokes of Dublin, a physician of great promise, has also tried this practice on a tolerably large scale, and with all the success which he had been led to expect from my papers upon this subject; and he has promised to lay the results speedily before the Profession. These gentlemen, and many others, have given their testimony

* I must take the liberty to refer the reader to the cases published in the 27th Vol. of the Edinburgh Medical and Surgical Journal, and also to those subsequently inserted in the Lancet.

not only as to the perfect safety of bleeding in the cold stage, but as to its great efficacy in stopping the paroxysm in a moment, and also in many cases as to its curing the disease. And if still stronger evidence were required, I can refer, with great confidence, to the cases in the work of M. Bailly, in which the usual remedies either failed, or could not be had recourse to from the patient's dying, shivering in the cold stage. To satisfy the credulous, and those who are bigotted to the system of Cullen, I would still further refer to the dissections recorded in the above work: and in order to provide every practitioner with means of forming his own opinions, I have published an additional paper in the Lancet, together with all the interesting cases and dissections from the work of M. Bailly *.

A curious and an interesting fact was communicated to me by Dr Foot, (who served with the 17th regiment in India,) when he did me the honour to attend my lectures, and which he has since published in his thesis,—that some Persian physicians apply ice to the surface of the body in the cold stage of intermittents, and it is reported with good effect. I have also heard that it is a practice with some in India, to use the cold affusion.

It is proper, also, to mention the plan of preventing the paroxysm upon the first appearance of its approach, by applying tourniquets to the extremities, which was first noticed by Dr Kellie, in the 1st and 2d volumes of the Annals of Medicine †. The tourniquets appear to act, by confining the blood in the extremities, and preventing so much at least of the congestion in internal organs.

The best treatment which can be pursued in the hot stage, is, to remove the bed-clothes as far as the season, and the patient's feelings will admit; to sponge the extremities with

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* Since writing the above, and while this sheet was in the press, I had the pleasure of seeing Assistant-Surgeon Marshall of the 87th Regiment, who stated that the practice of bleeding in the cold stage, was now commonly had recourse to in his regiment; and he added, that he had never seen a case in which he had to regret employing this means, and it had been successful in a considerable number of instances.

† This curious remedy is mentioned by Boisseau, p. 523, as if it were the original invention of Lallemand.

water; to use cold drinks; and, in fact, to employ every means which can diminish the temperature of the body. If there are marks of any local inflammation, bleeding is to be had recourse to, either general or topical, and has always been employed, by judicious practitioners, under such circumstances; but it is a curious fact, that although bleeding in the cold stage will, on many occasions, prevent a recurrence of the disease, it is rare that the same practice employed in the hot stage will have that effect. I need not speak of febrifuge and diaphoretic mixtures, which are very good for the druggist, will assist in filling the pockets of the routine practitioner, and suit the notions of a symptomatical physician. It is more than doubtful, whether such medicines ever diminished the violence, or shortened the duration, of the hot stage of an intermittent.

When the sweating stage commences, it must be encouraged till all the uneasy feelings are relieved, or at least mitigated. Great injury is done by allowing patients to perspire longer, by which they are not only unnecessarily weakened, but the subsequent paroxysms of the disease are in general rendered more violent. The best way of stopping this stage, is, to change the linens, after drying the patient carefully with towels, and to place him on a couch. A second paroxysm has been frequently traced to a chill, occasioned by the coldness of the damp clothes, towards the termination of the sweating stage. Should there be no marks of any local inflammation, the patient should be offered light nourishing food, and even wine if necessary.

Treatment during the Interval.—The first thing to be done, is, to determine whether or not there exists any local disease, and if so, what is its nature and seat? Medical men have hitherto deceived themselves very much by treating this disease, as well as many others, merely from its name; because it is intermittent fever, bark must be prescribed! Another error into which they have fallen, in the treatment of this disease, is, that they imagine the only organic lesions which take place exist in the liver and spleen, whereas the brain and the lungs suffer, perhaps, more frequently. I have also seen fatal affections of the heart arise in the train of conse-

quences from intermittent fever. Bronchitis is also a frequent occurrence. These facts are stated from my own experience; and, except the last respecting bronchitis, they are fully proved by the cases and dissections recorded by M. Bailly, as well as by the facts which are to be found in the works of Pringle, Cleghorn, Chisholm, and others.

If any organic disease exists, bark will be injurious, until it is either mitigated or entirely removed. Hence M. Bailly came to the following practical conclusion, that he bled, to dispose the system to receive the action of the bark, and that he has suddenly, by such means, subdued intermittent fevers, which had previously resisted all other means; and he assures us at page 366. that although he would not proscribe bark, yet he believes that bleeding alone, in most cases, above all, in our climate, would bring about a more substantial recovery than the bark. He also makes a very strong statement at page 375. "In the commencement of an intermittent fever, (says he,) one is almost always sure to destroy it by a large bleeding;" and he shews that this disease is not so fatal to poor, debilitated subjects, as to those who are better off, and better fed. For example, the mortality at Rome, where great misery prevails, is 1 in 26 of the whole population, whereas, in the marshes in the neighbourhood of the Sienne, the mortality is in the enormous proportion of 1 to 10 of the whole population. He also assures us, at page 383. that we are not to dread debility; for he states, that those patients who were bled by himself abundantly, and at short intervals, not only were not depressed by this debility, but recovered in a few days a state of strength and of health which they had not known for a long time. Had this distinguished author been aware of the safety and success of my plan of bleeding in the cold stage, he would not have made the complaint, that in the worst intermittents, that is to say, those which died in the cold stage, he had "not time to employ bleeding." Speaking of bleeding in this disease, he says at page 383:—"Car j'en excepte toujours les fièvres intermittentes pernicieuses, dans lesquelles on n'aurait pas le temps d'employer la saignée, si on ne se rendait pas maître du mouvement nerveux par ce précieux anti-périodique."

It is in such instances as these that the great advantage of bleeding in the cold stage is most apparent. In some of M. Bailly's cases, stimulants and bark, in considerable quantity, were given without benefit.

By bleeding in the cold stage, we stand upon vantage-ground. We assist the powers of the constitution, struggling to create re-action; we remove the congestion promptly, before any mischief is produced; and we place the patient in a situation in which there is no occasion for those efforts to be called into action, and which, as has been already stated, are never excited without considerable risk. Experience has also taught me, that bleeding in the cold stage is far more efficacious than bleeding during the hot, or in the intervals. Several cases might be quoted, in which bleeding was had recourse to in the hot stage to moderate threatening symptoms, but without preventing a return of the disease at the regular period; and in these same instances, bleeding in a subsequent cold fit, has had the effect, not only of stopping the existing paroxysm, but of preventing its return.

Bark has been long in use, and although I never denied that it had virtues in this disease, yet, when given in substance, in the large doses which are admitted to be necessary, I have so frequently seen it do mischief, that the question has often suggested itself to me, whether or not it was not more injurious than beneficial? It seems to be injurious, in many cases, by overloading the stomach and bowels with indigestible ligneous fibre, and I have seen it cause serious intestinal irritation, as displayed by griping pains in the bowels, diarrhœa, and painful tenesmus. On examining the stools in these cases, they seemed chiefly to consist of bark, with a considerable quantity of mucus, occasionally tinged with a little blood. The preparation from bark, which is known by the name of the sulphate of quinine, is the greatest improvement in modern pharmacy, and the knowledge of its beneficial, one might almost say *specific*, effects in *simple* intermittents, affords sufficient proof of the virtues of the substance from which it is extracted; yet this remedy, all-powerful as it is, is useless in the cold stage, and must also fail in cases complicated with organic disease. Dr Fordyce, who had great experience in

the treatment of this disease, states, that "in many cases of perfectly regular tertians, the most skilful practitioners have been baffled in the use of Peruvian bark, and every other medicine recommended as useful in this disease." My youthful readers may rest assured, that the same observations are equally applicable to the sulphate of quinine; yet they will meet very probably with many practitioners, who will assure them that they have never seen a case, in which bark, exhibited in substance, or in any other form, has failed in their hands. When they hear such statements, they may rest assured that such practitioners had had the good fortune never to meet with a severe case, or that there is some subterfuge. Some medical men, it is but charitable to suppose, are in the habit of deceiving themselves; for I have heard of many who allege they cure every case of fever, and every case of inflammation, by brandy, port wine, and beef steaks; and that the patients are to be regarded as in no danger, if they can only be got to swallow plenty of these articles. They also state that they carry lancets in their pockets, but that they never use them on any occasion. The sensible part of the profession regards any man as a quack, or an impostor, who asserts such universal success in the treatment of fevers and inflammations, and particularly by such means. It will be found that such individuals have recourse to subterfuges of the following kind. They undoubtedly lose patients; but as they do not choose to admit they died of fevers or inflammations, they assert that such a one died in a faint; or from debility; or from cachexia; or from a leuco-phlegmatic state; or from the nerves; or from softening of the brain, or some other organ, the effects, according to them, of any thing but inflammation!

It may be depended upon by those who are young in the profession, that no means hitherto devised can be expected to be universally successful; and the cases have been already pointed out, in which that most potent of all remedies in intermittents, the sulphate of quinine, may be expected to be beneficial, as well as those in which the same happy result is not to be looked for. It cannot be too strongly impressed

upon the mind, that experience has taught me to beware of any preparation of bark, while the patient has fever, or complains of oppression at the præcordia.

Sydenham's recommendation of prescribing bark in the intervals, has been supported by subsequent experience. Bark is given in substance, in decoction, infusion, and in extract; but no one who has seen the superior effects of the sulphate of quinine, will, I am persuaded, ever use bark in any of the other forms, if he can obtain it. With respect to the doses of quinine, Andral states that Lerminier has prescribed it in a very great number of cases, in two doses of three and four grains each, with an interval of half an hour, four or five hours before the paroxysm. And he assures us, that given in this manner, it has almost always cut the fever short. In some cases, the fever has been equally prevented, by the exhibition of the quinine twelve or fifteen hours before the paroxysm. Once the quinine was given by accident in the middle of the cold stage, and that paroxysm was neither weaker nor more intense than the preceding one. The greater part of those individuals who took the two doses of three grains each, had slighter paroxysms than before; but the fever was not suddenly cut short, as it was in those who took the two doses of four grains each. He also states, that in two cases the sulphate of quinine did not subdue the fever till the dose was increased to twelve grains; and Lerminier gave three individuals twenty grains each during the day, stopping the fever without producing any accident. But with several other patients, to all appearance in the same circumstances with the preceding, a few grains of the sulphate of quinine created troublesome nervous symptoms, such as, violent palpitation of the heart; oppression; the globus hystericus; general uneasiness; flying pains in different parts of the chest and abdomen *.

The manner in which I have prescribed the quinine, is to give three doses of five grains each, with half an hour of interval immediately before the expected paroxysm; or three grains every half hour, beginning about three hours before the paroxysm. I have taken three and five grains, without

* Clinique Médicale, p. 488.

feeling any thing unusual, and I afterwards ventured upon ten, but a violent headache followed, which continued for nearly three days; I have given ten grains, however, to others, on two or three occasions, without producing any such effect.

Arsenic has been long in use in intermittent fever, and there can be no doubt that it has often proved very serviceable. Fowler's solution is the preparation now in general use, under the name of *liquor arsenicalis;* the dose is from two to twenty drops twice or thrice a-day. Other tonics and bitters have also been recommended; the best of these is the infusion of quassia. Opiates have also been exhibited, immediately before an expected paroxysm, sometimes with benefit, as far as they occasionally cut short an attack, but they generally produce violent headache. Laxative medicines, to keep the bowels easy, form an essential part of the treatment; and in severe instances, the stools should always be examined. I have met with cases which resisted every remedy, till it was ascertained that the patients had given erroneous accounts respecting the number and appearance of the stools; and upon the bowels being put in proper order, the disease has given way without further trouble. From the idea, that intermittent is a disease of debility, many practitioners give nourishing and stimulating diet, with wine, in all cases; but after the pathological account which I have given, and the appearances found on dissection, a word more need not be said to shew the impropriety of such conduct. In some instances it is beneficial, where there is no local disease, in others it must prove prejudicial *. The patient should be clad according to the season of the year, and the temperature of the climate. He should avoid exposure in bad weather, and particularly in our climate during the prevalence of easterly winds, and keep to the house after sunset till he is sufficiently recovered.

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* It is quite unnecessary to notice the *practical* recommendations of Dr M'Culloch, who has not practised since the last century, but who, in the year 1827, has taken upon himself to write a practical work. It is surprising that a geologist should be allowed to occupy a pathological field of inquiry, without being blown out of it into his own proper sphere!! I entertain great respect for Dr M'Culloch as a chemist and geologist, but certainly hold him very cheap as a pathologist.

REMITTENT OR YELLOW FEVER.

The disease which falls now to be considered, is a fever which occasionally abates in violence, but in which the patient never feels quite well before a fresh attack comes on. It is a fever, in fact, in which there are remarkable remissions, which are followed in a few hours by exacerbations; so that this class resembles intermittents. This circumstance has led Cullen to identify them; and in his definition of intermittent, it will be observed that he has also embraced remittents, —of the last he gives no separate definition. It is a disease of warm climates, and when the skin is yellow it has obtained the name of Yellow Fever. The milder forms depend upon general functional derangement, which more quickly runs into disease of structure than in the fevers of this country. Remittent fever has, like all similar diseases, a very wide range of character; modifications of the complaint occur without end, according to the organ or organs affected, the constitution and habits of the patient, the locality of his place of residence. In its severest form, the principal viscera of the three great cavities are affected from the first onset of the disease, and there is no complaint in which the appearances on dissection may be so truly predicted, by watching the symptoms in their progress.

Phenomena.

The disease begins, sometimes at once, with great excitement and without any rigor; on other occasions, the rigor is severe. Generally speaking, there is some previous indisposition, such as headache and giddiness; want of appetite; symptoms of indigestion; oppression at the præcordia; constipation of the bowels; a feeling of debility and fainting; but of all these, oppression at the præcordia, some degree of headache and constipation of the bowels, are the most frequent premonitory symptoms. Sometimes it happens that the patient dies before re-action takes place, but this is comparatively rare; sometimes cases occur where the seizure is sudden and unexpected,—the patient is struck down, as it were; he loses his

senses; irritability of the stomach soon appears; black vomiting ensues, and he is carried off in the course of thirty-six hours. "It often occurred," says Dr Fergusson, "to a well-seasoned soldier, mounting the night-guard in perfect health, to be seized with furious delirium while standing sentry, and when carried to the barracks, to expire in all the horrors of the black vomit, within thirty hours from the first attack." This, it must be confessed, is the most severe form of the disease.

There are many varieties, concerning each of which it is impossible to treat in a work like the present. The most frequent form of the disease, is that in which, after the rigor, which may be more or less severe, there quickly succeeds violent re-action, heat of skin, flushed face, and determination to the head, announced by well-marked symptoms; the conjunctiva is injected, the eyes look heavy, and feel burning; the expression of the countenance leads an experienced person to judge correctly of the severity of the disease. The respiration is hurried and frequently laborious, often attended by cough, the patient occasionally sighs, and seems to gasp for air. The head is thrown about from side to side; and the patient is excessively restless from anguish. Severe darting pains in the head are sometimes complained of, as also in the small of the back and down the thighs. There is a burning pain in the pit of the stomach; unquenchable thirst, with incessant retching of every thing taken into the stomach, mixed sometimes with a great deal of bile, and accompanied with discharges of flatus which is belched up with great violence. The pulse beats variously even in people resembling each other in age, constitution, strength, and habits; but in plethoric subjects who are seized soon after their arrival in warm climates, the pulse is quick, full, and bounding for a few hours at least, after the re-action is fully developed. In others it is quick and not strong, and in others it is not particularly quick, and it is sometimes very irregular. The tongue is furred, perhaps red, but soon becomes parched and dark-coloured.—This is what is called the first stage of this fever. An anxious and distressed countenance, redness and sense of heat in the eyes, flushed face, intense headache, quick or laborious respi-

ration, burning pain in the region of the stomach, with great thirst and excessive vomiting, announce a most formidable disease; but, in my opinion, not so formidable and hopeless as another variety, in which there is more or less insensibility from the first, coma, weak and oppressed pulse, and cold extremities.

The first stage is very uncertain as to the time it will occupy. In very severe cases it lasts only from twelve to eighteen hours, but in those which are slighter, it may go on for three, four, or five days.

In the second stage the skin and eyes have a somewhat yellow tinge; the heat subsides a little; the head is confused, or delirium appears; the breathing becomes quicker and more anxious; the eyes begin to look glazed; the pulse sinks a little; the retchings are rather more violent; the matter vomited becomes thicker and begins to look dark; and if the person is sensible, he desponds; he occasionally falls asleep, but instantly awakes in great terror; sometimes he starts out of bed furiously delirious, but instantly falls down in a tremor upon the floor; the tongue is always parched, and in general covered with a dark fur; and the skin becomes somewhat clammy. In this stage, as well as the second, there are often cramps in the belly and legs, which distress the patient much. The duration of this stage is also uncertain.

The first stage sometimes terminates by a slight remission of the more urgent symptoms, when the patient and his friends indulge the fond hope that he has passed the worst; indeed, these remissions often occur, but the deception is soon manifested by the recurrence of all the bad symptoms in an aggravated degree. In the second stage also there are remissions, particularly towards its termination, when the patient again flatters himself with the prospect of recovery, for although the vomiting is more frequent and more copious, all uneasiness generally subsides, but the pulse sinks, becomes irregular, and intermits; although it sinks in strength, yet it increases in frequency. Nothing can be retained in the stomach; the matter vomited is of a dark colour resembling coffee-grounds, and is termed the "black vomit." The breathing becomes more laborious; the tongue has perhaps lost its

fur, it is shrunk, dry, and red; the eyes are sunk and glazed; the whole features are sharpened. As death draws near, the limbs become as cold as marble; there is a troublesome hiccup, which perhaps has existed throughout the whole of the second stage; sometimes hæmorrhage takes place from different parts of the body; the abdomen is frequently as tense as a drum well braced; and death steals slowly on, or takes place suddenly.

The symptoms in each of these stages must of course vary much according as the head, the lungs, and contents of the abdomen, are more or less affected. In some instances the functions of the brain remain entire, even to the very conclusion of the last scene; at other times, when there is extensive disease within the head, the delirium is more or less ferocious, or the patient is comatose; he exhibits a variety of nervous symptoms, such as convulsions, rigidity of the extremities, tremors, subsultus tendinum, and picking the bed clothes; or where the head is more slightly affected, the senses are only occasionally obscured; the patient may be said to be lethargic rather than comatose; he is easily roused, and when roused his whole countenance has a drunken or besotted appearance.

If the lungs are affected, the breathing will also be altered from that of health; but mere dyspnœa may exist, without any structural lesion of these organs; but there may be cough attended with pain, and subsequently expectoration. I never saw a case of remittent fever in which the chylo-poietic viscera were not very seriously involved, as indicated by nausea and vomiting, thirst, pain in some region, meteorism, and altered condition of the stools.

It may also be mentioned that the functions of the kidneys seem to be almost, if not altogether suspended, little or no urine being passed during the course of the disease; and the bladder is usually found amazingly contracted upon dissection.

Another variety frequently met with in very sickly seasons, is that in which a person, after passing several restless nights, is able to go through some of his duties for the first two or three mornings; but this costs him a very great effort. His

weakness increases, the bowels are out of order and bound, or after having been for some time constipated, he may now complain of diarrhœa; he feels chills and heats, but the least exposure makes him complain of cold; his stomach now begins to get irritable, he takes to bed, his senses become rather obscured, his breathing is affected in no other way than being short, and he cannot, even when he makes an effort, distend his lungs freely ; he complains most of oppression at the præcordia: sometimes a remission of most of these symptoms takes place, and his skin, which was never hot, and his pulse, which was never full, quick, and bounding, are now felt to be nearly natural; in a few hours the symptoms become aggravated. The patient is more inclined to be comatose; he complains now perhaps of violent pain in some region of the abdomen; the breathing is oppressed, the extremities cold and damp, while the surface of the abdomen and thorax is hotter than natural; hiccup comes on, the coldness steals onwards to the trunk, the pulse sinks, the countenance looks ghastly, and the patient's fate is quickly sealed.

But in a work like this, it is impossible to convey any but the faintest idea of the complications of remittent fever in warm countries. Sometimes the head is the chief organ affected, when the symptoms are what may be called cerebral and nervous. In another set of cases, the disease is concentrated on the lungs, when the symptoms will vary accordingly. In another set, the organs within the abdomen may be most affected, producing another variety; and of these there may be various complications.

Appearances on Dissection.

These appearances vary much, according to the duration of the disease, and the organ which has been its chief seat; some dying in the first stage, when we must not expect to see much, if any appearance of inflammation. Some patients may have been largely depleted, and we shall therefore see less vascularity in their bodies than in those subjects who have lost no blood. Some individuals may have died of remittent fever, who have been worn out by organic lesions produced by previous diseases. All these circumstances must

be kept in view when we are employed in morbid anatomical investigations.

I need scarcely be ashamed to confess, that when I was in warm climates exactly twenty years ago, I did not know how to investigate morbid appearances well, and therefore I must speak doubtfully from my own experience on this part of the subject; but it is distinctly in my recollection, to have seen in many cases, considerable turgescence of the vessels of the head, with effusion into the ventricles, and beneath the arachnoid coat; and in one or two cases, extensive alterations in the structure of the brain itself. Some writers mention effusion of blood, which is an appearance I have not happened to see.

A vast deal of blood is generally found in the heart and large vessels near it, and also in the lungs, if the individual has not survived long, and not been largely depleted. Pleuritic effusions are sometimes seen, and recent adhesions; the lungs themselves, in some instances, shew various stages of inflammation, and the bronchial tubes are extensively diseased. In the abdomen, as in the thorax, all kinds of lesions are occasionally observed, viz. the results of peritoneal inflammation; mortification of the bowels; the liver pulpy, soft, and easily broken down; sometimes its structure is completely destroyed, and it has been described by some authors to be in a state resembling "rotten cork." The spleen has been found altered in the same manner. The stomach and bowels, when slit open, are found to contain very commonly more or less of the dark-coloured matter which has been vomited during life; and the mucous membrane very vascular, of a deep red colour, not in depending portions only, but over a great extent of surface, sometimes throughout the whole.

In my day, it was not much the fashion to examine the mucous membranes minutely; and we still want information on the following points. Whether the vessels which make such an appearance are in the mucous membrane or not? Whether the whole thickness of the intestine is discoloured or not? Whether this colour is owing to inflammation or infiltration? At what particular points ulcerations are most frequently met with, together with a particular description of the appearances of the ulcerated surfaces, and the adjacent mucous membrane.

And it would confer a lasting favour upon me, and a benefit to science, if some enthusiastic pathologist would take the trouble to inject portions with vermillion and size, and send them to this country, together with sketches shewing the recent vascular appearances, if to enrich my rapidly increasing museum, the greater obligation will be laid upon me, and no remuneration which it is in my power to bestow, will be thought too great a sacrifice for such a boon *.

Causes.

It has already been shewn that the extremes of cold and heat are not very prejudicial to mankind. Fevers are produced more by sudden changes of temperature, or by heat conjoined with moisture, than by heat itself, however intense. The state of the mind has also a great influence, as well as the habits of the individual.

It has often been remarked, that there is great mortality among troops after their first arrival in a warm country. This is sometimes to be attributed to a want of due care on the part of Government, in choosing the season at which they ought to arrive. I believe a greater number of men will be lost during the first twelve months, if they are landed at the beginning of the rainy season, than at its termination; perhaps the loss will be double. Great care should also be taken in the selection of the troops; none but well-seasoned soldiers should be sent out. My friend Dr Ballingall has written very strongly and sensibly upon this subject, in his excellent work on some of the diseases incident to the troops in India. No recruit should be sent out to be made a soldier; all his drills and exercises should be completed in this country, which also gives time for his habits to be formed.

When troops arrive after a tedious voyage, it is natural to expect that they will indulge themselves beyond due bounds in many ways. Cheap new rum, and an abundant supply of delicious fruits, attract their attention, and do incalculable mischief. Some men leave England in the utmost state of de-

* It may be mentioned, that nothing affords me greater pleasure than to spend an hour or two in my museum with any pathological enquirer.

spondency, and it will in general be observed that they are the first victims. New comers are also apt to indulge in drinking too largely of cold fluids, and sitting in a thorough draft when the body is over-heated; in fact, it requires considerable time before a European obtains the knowledge how to manage himself properly. Some are fool-hardy, and take no care of themselves whatever; and I feel convinced, that an amusement in which young strangers too frequently indulge, known by the name of "*Dignity Balls*," causes many a death.

Many cases have come under my observation, in which fatal attacks of fever appeared to have been produced by inattention to the bowels; and I am convinced that it is a matter of the first importance to every one going to a warm climate, to keep his bowels easy by gentle medicine if he require it; and repeated observation has obliged me to remark, that a person may very often be exposed to any or all the causes of fever, even in the most unhealthy situations, without being affected, provided his bowels are in a proper state.

These are a few of the many causes of disease in warm countries, entirely independent of the influence of contagion, marsh miasm, and epidemic influence.

It cannot be denied, that yellow fever is occasionally under peculiar circumstances highly contagious, but that it is not always contagious, I appeal confidently to every practitioner who has ever been within the tropics, and whose mind is not warped by prejudice. That the disease is occasionally produced by the state of the weather, must also be admitted. After all, this is not a matter of so much importance, as a knowledge of the nature and seat of the disease. As medical men, we have more to do with effects than causes. If a fever or an inflammation can be traced by the clearest evidence to the application of cold, a physician does not give battle to the cause, but to the effects produced. It is not meant that we should not attend to this point, as it is of the utmost importance to drain a marsh, and to render a habitation dry and comfortable. But it is seldom that the voice of a medical man is listened to on such subjects, in proof of which I may allude without impropriety, to the disinterested, manly, and long continued, but unsuccessful exertions of the late Dr Jackson.

Pathology.

With respect to this part of the subject, I have little to say, except to refer to the short general account already given of the pathology of fever. Remittent fevers have the same pathology as other fevers, only it will be found in general that the structure of more organs is involved than in the ordinary fevers of this country. But it may be noticed, that there is no species of fever which upholds the doctrines of Broussais more completely than the Remittent.

Treatment.

There have been as great revolutions in the treatment of the fevers of warm climates, as in any other class of diseases with which I am acquainted. The supporters of the doctrine of putridity have, of course, always avoided bleeding even in the first stage, when they admit the existence of inflammation, for fear of the debility which they expect in the latter stages. They begin by clearing out the stomach and bowels, and then have recourse to bark in very large doses, without regard to the state of the stomach, local inflammations, or any other circumstances. This is the practice recommended by Clark, Lind, and others, many years ago. They also recommended opium, for the purpose of keeping the bark upon the stomach, and they also gave wine and brandy in considerable quantities, with the view of supporting the strength, keeping off the state of collapse, and preventing putridity. But it may be stated without fear of contradiction, that this practice cannot be too severely reprobated as a general practice. It should also be recollected, that the stage of collapse must come on sooner or later. No person can pass from a state of fever into that of health and strength; and the longer it is put off the worse will it be for the patient, whose situation very much resembles that of an individual in debt, who puts off the evil day from time to time by various means, and when his creditors meet at last, it is found he has not means to pay, whereas had he settled with them sooner, the strength of his credit would have survived the shock without injury.

The late Dr Chisholm, about the year 1793, introduced the plan of affecting the system with mercury as speedily as possible, employing bleeding in small quantity, and only occasionally, more with a view of enabling the system to receive the mercury, than as a powerful measure calculated to subdue inflammatory action. Now my recommendation would be the reverse, to use bleeding as the chief means, and mercury as an auxiliary. The celebrated Dr Rush bled and gave calomel to diminish the increased action; and the reason this practice did not maintain its ground, is, that he trusted a little to the bleeding, and a little to the calomel, on the principle of gradually depleting the system. He rarely took more than sixteen ounces of blood at a time; and notwithstanding he repeated the bleedings frequently, yet he never produced decided effects upon the disease, although he sometimes took away from one hundred to one hundred and twenty ounces of blood; the practice would have been far more efficacious, besides saving blood to the patient, if he had taken away twenty, thirty, or forty ounces at once. When it is thought necessary to bleed in this disease, it is trifling with the patient's life if the blood is not allowed to flow till some impression is made upon the disease, and upon the system; and it is impossible to determine beforehand the quantity which will produce these effects. This is the kind of practice which was pursued by myself and many others who were in the West Indies twenty years ago; and it appeared to be attended with great success.

The bold and decisive use of the lancet in this disease has met with an able and influential advocate in Dr Jackson, who was for some years Inspector of Army Hospitals in the Windward Islands. This distinguished individual bled to the extent of thirty, forty, fifty, sixty, and even seventy ounces at once in the very beginning, with a view of making a decided impression upon the disease, and upon the system; and he repeated the operation within three hours, if the first evacuation had not been productive of permanent benefit; after this he gave calomel in doses of from five to thirty grains, repeated every third or fourth hour.

Bleeding has been strongly objected to, however, on account of the condition of the blood in some cases when it is drawn. It appears of a very dark colour, looks streaked with red and blueish lines; it coagulates very imperfectly, sometimes not at all, and does not separate any serum. It is in the state commonly called "dissolved blood," and which announces, it is supposed, a putrid state of the whole body, and particularly of the fluids. This appearance does not deter me from repeating the operation, as I have been long aware, that it exists more or less in all severe cases of congestion; hence I have frequently been able to shew it to my pupils, in cases of intermittent fever, in which I have bled in the cold stage; also in cases of congestive fever. It has also been noticed by Indian writers on cholera; and the same condition of blood may be seen in patients affected with cholera in this country, and has also been observed in some of the severest cases of double bronchitis.

Dr Rush says he paid no attention to the dissolved state of the blood when it appeared on the first or second day of the disorder; but repeated the bleeding afterwards in every case where the pulse indicated it. He states a fact which I can verify, that it is common to see sizy blood succeed to that which was dissolved. He also states, that he was never deterred by the presence of petechiæ from blood-letting in cases in which the pulse retained its fulness or tension.

Although the necessity must be admitted of keeping the bowels freely open in this class of diseases, yet I had not been long in a warm climate before I observed the injurious consequences produced by strong drastic purgatives, and I have actually seen individuals lost by the constant irritation kept up by this means. The appearances on dissection, too, warrant me in cautioning practitioners not to persevere too long in giving strong purgatives; for what is the use of moderating general irritation and increased action, if these are immediately re-excited? The common purgative used in the West Indies, was ten grains of calomel and a scruple of jalap. Emetics have been often extolled, but I believe every experienced tropical physician will agree with me in

cautioning young practitioners against their indiscriminate employment; irritability of the stomach is one of the most troublesome symptoms, and once excited, it is always difficult, in many cases impossible, to restrain it. I have seen emetics exhibited, and sometimes the vomiting has continued in spite of every remedy till death took place. The same caution is necessary with regard to those remedies which are employed for controlling the action of the heart and arteries. I have often regretted in the West Indies, not having a command of leeches, and I am persuaded, that upon a proper representation, the Government of this country would take steps, at whatever expense, to secure a proper supply to the medical officers of the army and navy. There is no disease in which dissection reveals so many organic lesions, and the efficacy of abstracting blood in such cases by leeches is generally admitted, particularly after the strength of the disease has been broken by the lancet.

After the publication of Dr Currie's work on "Cold Affusion in Fever," it became generally used in remittent fevers, but so much mischief followed its employment, that it has fallen into disuse. Dr Currie has distinctly stated, that it is not admissible in cases where there is any internal inflammation; therefore, in the majority of cases of the fever now under consideration, the practice will be found to be injurious rather than beneficial. But when the skin is dry and burning, nothing gives the patient more temporary relief, than spunging the body with water, or vinegar and water, and this ought to be very frequently repeated.

The application of blisters and other counter-irritants are highly serviceable after bleeding, &c. but should never be had recourse to in this or any other fever in the first part of the disease.

I have seen stimulants appear to save life, but in candour it must be mentioned that I have also seen them very prejudicial; and I believe that nothing in the whole practice of physic requires more caution and experience than their exhibition; but I shall speak more fully upon this subject when treating of the fevers which prevail in this country. The

best stimulants are wine and brandy; in many cases where the stomach is irritable, brandy upon the whole will be found to agree best. In the last stage great care should be taken to support the heat in the extremities, and this is best done by means of hot sand in flannel bags, or bottles filled with boiling water.

Partly from the notion of the resemblance between remittent and intermittent fevers, and partly from this disease being supposed to be one of putridity, bark has been employed. By some it is recommended throughout the whole course of the disease, by others only during the remissions, and in the last stage; but my belief from what I have seen is, that it has done more mischief than good under such circumstances. I have often had to blame myself for bringing on an exacerbation, not only by the use of bark, but nourishment and stimulants, during the first remissions; and a strong impression is left upon my mind, that it would be better for patients if less were done for them in the state of apyrexia, and also in the commencement of convalescence. No doubt, however, can be entertained, that the sulphate of quinine would be of signal service in many cases *.

INFANTILE REMITTENT.

A GREAT many diseases occurring in infancy and childhood have obtained this name, as inflammation of the brain and lungs, the irritation produced by worms, rheumatic affections, &c.; in all of which, and even in cerebral and pulmonary inflammations, there are very remarkable remissions in young subjects. But the disease which is to be considered in this section is a febrile affection produced by irritation, inflammation, and ulceration of the mucous membrane of the stomach and bowels.

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* For more particular information the reader is referred to the works of the following writers,—Lind, Sir John Pringle, Clark on Long Voyages, Rush, Mosely, Jackson, Harrison, Johnson, Ballingall, &c. &c.

Phenomena.

The little subject is observed to be listless and fretful, thirsty, and to pass restless nights, with some heat of skin. In a few days the skin is hot and dry, thirst and restlessness are increased, the breathing hurried, and the pulse very quick; it is more uneasy and restless at night, but towards morning the skin becomes slightly moist, and the child has some disturbed sleep; the bowels are constipated, or there is diarrhœa, but the former is more frequently met with; or the child may have frequent desire to go to stool, but passes only a small quantity; if there is any evacuation, it is discoloured and fetid, and very unlike what is natural to it; in colour the evacuations are not always dark, but sometimes white, shewing a deficiency of bile, and sometimes blueish, but always offensive, and often mixed with mucus, and occasionally with a little blood. The child cries frequently, and draws its knees up to the breast,—and it cries more when the belly is touched, which feels generally hotter than the rest of the body, and tympanitic. It prefers cold water to drink, and frequently shews signs of increased abdominal pain after a copious draught; the stomach is occasionally very irritable, and every thing is vomited; the tongue, being at first moist and loaded, and occasionally very red round the edges, soon becomes dry over a triangular space at the tip. On some occasions it is difficult to keep the hands and feet sufficiently warm, while the face is flushed and the rest of the body hot.

If proper treatment is not soon pursued, the functions of the brain occasionally become embarrassed, and head symptoms are lighted up, and it is difficult, in many cases impossible, to determine whether or not disease of structure is going on in the head.

On other occasions the respiration, which has been hurried from the first, owing perhaps merely to the increased circulation through the lungs, in time becomes laborious, a troublesome short cough appears, and, in general, auscultation will announce a more or less extensive inflammation of the

bronchial membrane; and if the disease is not subdued, wheezing and expectoration will follow. Sometimes the child appears to be recovering for a few weeks, and then relapses, and, during the remission, it even gains flesh and strength, but the abdomen remains tumid, and in this condition the child may remain getting better and worse till the mesenteric glands become enlarged, or dropsical effusion takes place into the abdomen; the emaciation increases; there is no fever except at night; the appetite is occasionally voracious, and, in fact, the little sufferer presents all the symptoms of the disease usually known by the name of Tabes Mesenterica.

Appearances on Dissection.

The most constant diseased appearances are found in the abdomen. Sometimes peritoneal inflammation seems to have been the immediate cause of death, and I have had many opportunities of ascertaining that inflammation of this tissue has been excited by the extension of ulceration of the mucous membrane, through the muscular and mucous tissues. The mesenteric glands are very generally found enlarged, sometimes enormously so, and seem to consist of a cheesy-looking matter, which is usually described as depending on scrofulous action, but I believe from erroneous pathological notions, which shall be explained hereafter. On cutting open the stomach and bowels, the mucous membrane will be found in various conditions, thickened, softened, ulcerated, occasionally very vascular. The ulcerations in the ilium and colon strictly resemble those which I have afterwards to describe in the bowel-complaints of children, except that the whole mucous surface of the colon is occasionally involved in one sheet of ulceration, with a rough and ragged surface and hypertrophy of all the coats, as is observed in many cases of phthisis pulmonalis. When there is no ulceration, we sometimes see mere vascularity, with or without softening of the mucous membrane, the quantity of thick mucus adhering firmly to the surface is very great; and it is curious, that after being carefully removed by washing and wiping, I have seen fresh exudations take place even during maceration, not only in water,

but in spirits; and what has sometimes surprised me very much, after having laid by preparations, when I thought they were quite free, I have found them many months afterwards again thickly coated over with mucus. Large abrasions are also sometimes found in the mucous membrane of the stomach, at the splenic extremity, which have penetrated through all the tissues at one point; in other places they appeared to be converted into a gelatinous mass. From careful examination, it would seem that this kind of disorganization is the effect of previous inflammation. This appearance has excited considerable interest of late years, and has been noticed on the Continent by Cruveilheir and others, and in this country, many years ago, by Underwood, who nevertheless was no great pathologist; but the Profession stands greatly indebted to Dr John Gairdner of Edinburgh, who has collected a great number of interesting cases, some of which occurred in his own practice, which will be found in the first and second volumes of the Medico-Chirurgical Transactions of Edinburgh.

It has been stated in the description of the disease, that head and chest symptoms sometimes become lighted up, but on watching the progress of the affection, these are observed not to form essential parts of it; nevertheless, the appearances sometimes found in these cavities, deserve to be mentioned.

In the head there is generally effusion in the ventricles, and also between the arachnoid and pia mater, with great vascularity in the latter membrane.

In the thorax, the most common appearance is in the bronchial membrane, which is vascular, and the tubes are more or less filled with mucus, which is to be described more particularly when treating of bronchitis. The substance of the lungs also shews various degrees of inflammation, and occasionally traces of pleuritis are to be seen.

Causes.

These are, a long continuance of indigestible food taken into the stomach, such as raw vegetables, sweet-meats, the habit of allowing children to eat too many articles of food at one meal, together with insufficient clothing and unwholesome

food, to which the children of the poor are so frequently exposed. Teething sometimes produces symptoms like those I have described.

Pathology.

From this view of the phenomena of the disease, together with the appearances on dissection, and the causes, the reader will have anticipated what I have to state respecting the nature and seat of the disease, that it depends on irritation and inflammation of the mucous membrane of the stomach and bowels, particularly of the latter.

Treatment.

Abstinence from every kind of solid food is necessary; even biscuit, crusts of bread, and the pulp of oranges, frequently produce relapses. Leeches should be applied to the abdomen in all cases where there is much vascular action, pain, and much heat of skin, if gentle laxatives, frequently repeated, do not mitigate the symptoms; fomentations should be applied to the abdomen; when the skin is hot and parched, sponging the body frequently with tepid water will often make the child less restless. The practitioner should be particular in all cases, but more especially in attending children, to examine the stools, and the quantity of clothes with which they are covered, which will in general be found to be too great. A remarkable case occurred to me four or five years ago, which is worthy of being mentioned. A child aged seven was seized with some degree of chilliness, followed by re-action, thirst, want of appetite, nausea; the respiration became hurried, and he complained of considerable headache. He was ill for five or six days before I saw him, and had taken sundry doses of salts and senna. On examination, I found the abdomen distended, tense, tympanitic, and somewhat painful to the touch; his thirst was considerable, the respiration quick, the face flushed, with some headache, and he complained of noise and light; the tongue loaded with a white fur, moist every where but at a small triangular space at the tip, which was red, as were also the edges; he had no vomiting, but a dislike even to the smell of solid food; he was very uneasy and

restless, passed sleepless nights, and the pulse was quick, not particularly strong. During the course of eight days, leeches and fomentations were frequently had recourse to, and always with marked relief; but it was always of short duration. Gentle laxatives were frequently given, and injections administered, but all to no purpose; the stools were slimy and scanty, and as the child had been so long without even taking gruel, it was imagined that there was little in the bowels. The abdomen was blistered. At last something excited my suspicion respecting the state of the bowels, and castor oil was given to him on the fourteenth day every second or third hour, after a moderate dose of calomel and jalap. On going to stool, he complained very much of pain, and he was observed to strain most violently; and after some time, passed what appeared to be a very large fetid stool, which surprised me very much; it was so large that I was induced to stir it about with a bit of stick, and three hard masses were discovered in the middle, surrounded with a great quantity of mucus; upon close examination, they proved to be a dollar biscuit and two pieces of solid meat; the biscuit was soft, but quite undigested and whole, with the exception of its margin, part of which had been broken off; the depressions generally made on the surface of biscuits were quite distinct, as also several of the letters of the baker's name. This biscuit was seen by a great number of gentlemen who were attending my lectures at the time, and is now in my museum. One piece of meat was large, and must have formed a good mouthful; the other was small, but both were quite unchanged by digestion, and not so putrid as might have been expected; it turned out that the boy was in the habit of bolting whatever he had in his mouth, without mastication. It need scarcely be added, that his recovery went on well after he got rid of these substances.

If the disease has become chronic, occasional leeching, perseverance in gentle laxatives, a nourishing, but mild, bland diet, and a long perseverance in counter-irritation on the surface of the abdomen, by means of the tartar-emetic ointment, and an occasional hot bath, are the best remedies. If there are evidences of effusion into the abdomen, with scanty

urine, a preparation of calomel, squills, and digitalis, in doses proportioned to the age and strength of the patient, will be found serviceable, together with drinks acidulated with cream of tartar. Many of the students attending my Dispensary, have seen remarkable recoveries, even in cases which at first appeared to be altogether hopeless, under the plan of treatment above described *.

CONTINUED FEVER.

Cullen and others maintain, "that there is no such disease as that which the schools have called a Continued Fever;" so much so, that he alleged he had never seen it once in his lifetime. There can be no doubt, however, that there is such a class of diseases, if we look at nature; and that Cullen would have seen it if he could have looked through any other medium than that of his own erroneous theories. According to his definition of Continued Fever, there must be no intermission; it must not be produced by marsh-miasmata; but there must be remissions and exacerbations, and two paroxysms in each day. Although all his definitions are bad, this is to be regarded almost as the very worst. Often have I seen slight continued fevers terminate in regular intermittent, and intermittent in continued fever, at least as much as any fever can be said to be continued; continued until death closed the scene, or rather, I should have said, till that stage of collapse took place which precedes death. This definition must be admitted to be fine-spun; for if there is no continued fever, it may also be said there can be no continued inflammation of the brain, or of any other organ,—there is no continued acute rheumatism and gout,—or, in truth, any other disease; that is to say, there is no disease in which the symptoms continue to be of the same degree of violence throughout. In all fevers,

* Dr Butter has given a minute description of this disease; the perusal of which will not be of any use to a young student, because it is not a pathological description.

as in all diseases, there are intervals in which the patient is easier, and appears, perhaps, rather better; and there are also nocturnal exacerbations, which may be partly attributed to the sick being worn out and made worse by fatigue, heat, light, and noise.

All the fevers which are to be described in this class, are called "idiopathic," as well by those writers who have identified in their own minds fever with inflammation, but who will not allow the existence of "*any primary local disease*" in fever, unless that local disease be one of inflammation; as by others, who deny the existence of local inflammation entirely in fever. Cullen belonged to this last class, and he states that he had never seen a case of inflammatory fever but one, therefore he endeavoured to place these fevers beyond the pale of pathology, being no pathologist himself. In this spirit has he framed the definition of fevers: "After languor, lassitude, and other signs of debility, pyrexia; without any primary local disease." The reader will see at once the absurdity of this symptomatical pathology, which denies to any fever whatever, except hectic, any primary local disease, for he is subsequently compelled to place inflammatory fever as one of his orders, and although he gives a very common-place reason for calling inflammatory fever "*synocha*," and an explanation that this term is not to be used in its "*vulgar acceptation;*" yet we are not to be told in the present day, that the pathology of a disease can be changed by a mere name, which any one may invent. All Cullen's disciples will be found to fall into the same error, but they become caught in their own net in describing the order Synochus, which, according to them, is a compound fever, of an inflammatory nature in the first stage, followed sooner or later by typhus.

Cullen, in the 141st paragraph, makes the following statement: "In the case of synocha, therefore, there is little doubt about the propriety of blood-letting; but there are other species of fever, as the synochus, in which a violent re-action and phlogistic diathesis appear, and prevail during some part of the course of the disease; while, at the same time, these cir-

cumstances do not constitute the principal part of the disease, nor are to be expected to continue during the whole course of it; and it is well known, that in many cases the state of violent re-action is to be succeeded, sooner or later, by a state of debility, from the excess of which the danger of the disease is chiefly to arise. It is therefore necessary, that in many cases blood-letting should be avoided; *and even although, during the inflammatory state of the disease,* it may be proper, it will b necessary to take care that the evacuation be not so large as to increase the state of debility which is to follow."

It was Dr Baillie's opinion, that typhus was as rare as Cullen states inflammatory fever to be. The truth is, that a great deal depends upon the class of people among whom a physician practises, and the period of the disease at which he generally sees his patients. Our army and navy surgeons have to treat fevers in subjects well fed and clothed, and whose regularity of conduct is enforced by military discipline, which physicians cannot expect among the inhabitants of St Giles in London, and the Cowgate in Edinburgh. Therefore they seldom see pure typhus in their practice; and they will have to blame themselves if they often meet with synochus; for they are too bold and intelligent, and are too well versed in military tactics, not to attack the enemy before he gets possession of their strongholds; and they will rarely be found guilty of declining an engagement for fear of another enemy which may attack them when they are weakened by the combat. Soldiers and sailors can very rarely conceal a fever; so that they are brought at once to the medical officers, who therefore see the disease early, and before it becomes complicated. Yet these gentlemen are not entitled to say there is no such disease, which physicians attending the poor most frequently meet with. A great deal also depends upon the treatment pursued in the first stage. If a physician were always afraid in the first stage of fevers to apply the proper remedies, when inflammatory symptoms presented themselves, lest a low or putrid tendency should subsequently occur, he will of course frequently see the compound fever "synochus."

I have now to treat, *first*, of fever from functional de-

rangement; *secondly*, fever from inflammation; *thirdly*, fever from congestion; *fourthly*, a mixed form of fever, consisting of a combination of these three, but in which congestion generally predominates at last, commonly called Typhus and Synochus.

FEVER FROM FUNCTIONAL DERANGEMENT.

All ages and classes of society are liable to this form of fever; but more particularly children, and those who have the inclination and means to overload the stomach and bowels with too much nourishment. It is not, in general, very formidable; but occasionally cases are met with which are abundantly alarming, and difficult to treat, from the impossibility of fixing upon any one organ which can be said to be affected severely, and yet all organs are out of order, giving rise to considerable constitutional disturbance. The symptoms are exceedingly slight, often for a week or ten days. The patient feels chilly, which he is apt to attribute to the weather; increasing weakness and languor, which he thinks are owing to impaired appetite; he has restless nights with burning heat in his hands and feet, and some thirst; and at last his whole surface is hot; he perhaps goes to stool once a-day or even twice, and he passes something, which satisfies him that his bowels are right, when all the time they are constipated; and when a medical man is called, he will find him much in the following state:—skin parched; thirst considerable; tongue loaded with a yellow fur; without appetite; and the pulse perhaps about 95 or upwards; the urine scanty and high coloured. He complains of restlessness, particularly at night; and general uneasiness, with oppression at the præcordia; he has slight headache; but complains most of pain in the back in the lumbar region. The stools, when examined, will be found fetid, scanty, and sticky; or watery and dark coloured, containing small hardened portions of feces, and often mixed with a good deal of mucus. He experiences disgust to the articles of food which in a state of health he most relished, even with tea and coffee, milk, beer, &c. During the night, he does not exactly know where he is; if he falls asleep, it is disturbed,

and he awakes with a start, the effect perhaps of a terrific dream; and occasionally there is slight delirium. In some cases these symptoms continue even in a slighter degree for fourteen or fifteen days, and at last terminate in inflammation of some organ, and in the end assume the type which is termed typhoid; in fact, these are the cases, particularly where there is delirium, which many people call typhus mitior. This is the kind of fever which is in general cured by confinement to bed; a steady perseverance in gentle laxatives, repeated two, three, and even four times a-day; abstinence from solid food, and quietness. These are the cases in which wine is often prescribed by Brunonians, with far less detriment than solid food or beef tea. These are the cases in which the cold affusion has been so serviceable, because there is as yet no local inflammation.

Sometimes the fever is very sharp, and there is considerable excitement, with increased heat and general uneasiness; the pulse above 100, full and strong; much oppression at the præcordia; the respiration hurried; and the tongue is loaded, perhaps dry and parched; and the bowels are very much disordered.

Treatment.

I have a great dislike to treat this form of fever, and for the following reasons: first, the patient has been long ill before he confined himself and sought for medical advice; secondly, the symptoms even then are apparently mild, while internal organs are seriously impeded in their functions; thirdly, if inflammation has taken place in any internal organ, it is more difficult to treat than in pure inflammatory fever, from the exhaustion occasioned by the previous indisposition; fourthly, nothing can be beneficial if the greatest attention is not paid to the moral management of the patient, and giving him the laxative medicines at the regular periods, and rigidly withholding improper articles of food. Bleeding is certainly not necessary in all cases, but it is serviceable in many. I have frequently had several fevers of this description on my hands at one time during the autumn months; and I have chosen patients resembling each other as closely as possible in habits, temperament,

&c. I have drawn blood from some of these and not from others, and I never had reason to regret bleeding, but I have often had to lament not doing it. It may be here mentioned, that bleeding is often employed from other motives than merely to cure inflammation. It is sometimes employed to moderate excitement, to diminish plethora, to alter irregular determinations of blood, and also to remove venous congestion.

In such cases bleeding may be objected to, nay, we have seen that it is objected to, even in cases of inflammatory fever, but I am sure it is safe in a majority of cases; and this conclusion has been strongly impressed upon me by observing the manner in which this kind of fever in particular frequently terminates; first, it terminates upon the appearance of an eruption, which eruption is generally urticaria, sometimes erysipelas, which acts beneficially by counter-irritation; secondly, I have seen it terminate by epistaxis; thirdly, by diarrhœa; fourthly, by profuse night-sweats; and fifthly, by abscess. Taking a common-sense view in reflecting upon these matters, I cannot help coming to the conclusion, that it is best for the practitioner to take the law into his own hand, and to deplete before the strength of the body is reduced by the natural effects of the diseased action. If at all in doubt about the propriety of general bleeding, the practitioner can have recourse to leeching; and in the cases now under consideration, the best place to apply the leeches is upon the abdomen. Experience has led me to this practice, even in cases, in which although the symptoms ran high, no local inflammation could be detected; and I can speak strongly of its success;—the number of leeches always to be proportioned to the age and constitution of the patient, together with the severity and duration of the disease. Emetics are very serviceable in the first stage of this fever, in order to unload the stomach of any crudities it may contain. It has been already stated, that laxatives frequently repeated are highly necessary; to an adult I give powders consisting of two grains of calomel, and six or eight of jalap or rhubarb, or a pill with the same quantity of calomel and four grains of the compound extract of colocynth. A child of six years old will require the same

quantity of calomel, and four of jalap or rhubarb,—the dose to be repeated every second, third, or fourth hour, according to circumstances, till evacuations are produced, or till a fourth dose has been given, when the medicine is to be assisted by the administration of mild injections. Fomentations may also be applied to the abdomen. If the body is hot, it should be sponged with cold or tepid water, as may be most agreeable to the patient's feelings. Opiates are rarely admissible.

Affections of the brain and bronchitis are to be dreaded in neglected or ill-treated cases of this class of fevers.

FEVER FROM INFLAMMATION.

It will be recollected that, in a former part of this work, the arbitrary doctrines of fever which have been promulgated by different individuals, namely, that fever depended upon inflammation of one particular viscus or set of viscera, were rejected; and my own opinion was distinctly stated, that inflammation of any viscus or tissue of the body, occasionally gave rise to febrile disease.

Phenomena of Inflammatory Fever.

In this disease the combination of symptoms denominated fever is present, and depends upon inflammation of an acute or sub-acute nature, of some organ or tissue of the body; generally it is sub-acute action. Let this short description be contrasted with Cullen's definition: "Heat much increased; pulse frequent, strong, and hard; urine red; the animal functions but little disturbed."

Inflammatory fever is ushered in, in the same manner as other acute affections, viz. with a rigor. During the early stage, the patient feels drowsy, yet cannot sleep; he feels reluctant to move from one room to the other, from a feeling of languor and debility; there are loss of appetite, vitiated taste, thirst, loaded but moist tongue; general soreness is complained of, and there are nausea and vomiting; headache, or pain in the back; occasionally a combination of all these symptoms is present. Sometimes after the first rigor, heat of skin, and

all the other symptoms of fever, immediately set in; on other occasions, there are alternate chills and flushes of heat for several days, till at last the heat predominates, and is permanent; the face is flushed, the skin intensely hot, with thirst, restlessness, general uneasiness; in most cases there is more or less delirium at night. Sometimes this fever takes place without any cold stage.

It is necessary to observe, that the symptoms vary according to the organ principally affected; but in all cases where there is great excitement, the breathing is quick and anxious, the belly costive; the tongue becomes parched, but it may be loaded, very red, with its papillæ much raised; or intensely red only at the tip and round the edges; the pulse is generally full, strong, and bounding, beating above 100, perhaps even 130 in the minute; there is also oppression at the præcordia.

In very acute cases, I have observed the skin not only parched and burning, but red, making a considerable approach towards an exanthematous affection. Inflammatory fever also terminates by what is termed a crisis, by hemorrhages from different parts of the body, particularly from the vessels of the nose and bowels; by diarrhœa, by collections of matter in various parts of the sub-cutaneous cellular membrane, for example, in boils and carbuncles, which generally make their appearance upon the buttocks. But these natural terminations are not to be depended upon.

If the fever go on without proper treatment, disease of structure will ultimately take place, in severe cases as early as the seventh or eighth day; in slighter, not before the twelfth or fifteenth; and in still slighter, not till between the twentieth and thirtieth. Whenever this event happens, we shall see all the symptoms of the typhus gravior, with petechiæ, &c. &c. and then the case is called synochus. The symptoms vary not only according to the nature, but more particularly the seat of the disease; and it is necessary in this place to give a description of these, which may be made applicable to the other kinds of fever.

There are several general symptoms which are common to a vast number and variety of diseases; as headache, heat and

dryness of skin, thirst, some degree of nausea, restlessness, anxiety, oppression at the præcordia, dyspnœa, scanty urine, scanty and fetid stools, &c.; but there are one or two symptoms which peculiarly announce diseases of particular parts.

If the head is affected with inflammation, the symptoms will vary according as the inflammation affects the membranes, or the substance of the brain itself. If the membranes, there will be delirium, increase of strength so that it will require some care to keep the patient from starting out of bed; the eyes will look red, vascular, the pupils contracted, and present a ferocious expression; the patient will complain of pain of head, by gesture if he cannot by words; the carotids will throb, there will be great restlessness. The face is not always flushed, it is sometimes pale, the pulse quick and strong, and the tongue dry, and perhaps in constant motion. Subsequently starting of the tendons, picking of the bed-clothes, and sometimes convulsions, take place, particularly in young subjects; the patient then becomes comatose, which increases; the pupils are dilated, and squinting often occurs. The respiration becomes more and more rapid and irregular, with an occasional interruption, immediately followed by a sigh; the pulse, which had been quick at first, and had afterwards become slower, is now again rising in frequency; it is irregular, and intermits. The coma becomes more profound, and death takes place with or without convulsions.

Whereas, if the substance of the brain is inflamed, the heat of skin will not be particularly marked, and the pulse will fall much under the natural standard; perhaps it will beat 60 or 50, and I have seen it even slower. The extremities may be in constant motion or not; they may be rigidly contracted, particularly the fore-arms, or if not so, they become contracted the moment the arm is touched even to feel the pulse; or this rigidity may be confined to one arm; the pupils are generally dilated, and the eye-lids half or fully open, sometimes one is shut and the other open; the tongue is not always dry till towards the last.

In both cases the respiration is much the same. The bowels are generally bound, and when stools are procured, they are passed involuntarily in bed, as is the urine; although the blad-

der sometimes loses its power completely, and becomes greatly distended.

If the lungs are affected, the respiration will become more laborious; there may be cough, with more or less expectoration; the patient may complain of a sensation of rawness under the sternum and in the windpipe, or perhaps a stitch in the side may be felt; but here, as in all chest cases, we must make use of our ears in addition to the usual symptoms, in order to discover whether any inflammatory affection is going on in the respiratory organs. The advantages of the grand discovery of auscultation, will be stated more at large when treating of the diseases of the chest; but it may be mentioned, that even before I had been much practised in the use of the stethescope, I was able to point out "*the primary local affection*" to exist in the lungs, in cases which were supposed to represent the pure idiopathic fever. It is my belief, that much of the fierce opposition which exists on the part of the disciples of the old school, arises from the dread of the immense reform which must take place in the Practice of Medicine, in the course of a very few years, from the general application of this additional means of diagnosis; and partly because those whose ears become well tuned to the stethescope, will be able to point out the "primary local affection" in idiopathic fevers. I have been much amused with the opposition of some physicians, but the circumstance is easily explained, when it is known that some of them may possibly be rather dull of hearing!

If the seat of the inflammation is within the abdomen, it may be expected to be announced by one or more of the following symptoms,—pain, increased on pressure; but it must be remarked, that when the mucous membrane of the intestines is the seat of the phlogosis, frequently little or no pain is experienced even upon pressure. The patient lies in that position in which the abdominal parietes are most relaxed; there is more or less tympanitis; and the heat is greater over that part of the body than any other. Nausea and vomiting are more or less severe; the patient drinks large quantities of cold fluid, although he knows it will produce an increase of griping pain, and perhaps will be immediately vomited. The condition of the tongue has, I fear, been much misrepresented. The most

extensive inflammation, and disorganization of various kinds, may be going on in the mucous membrane of the stomach, and bowels, without producing redness of the tongue or elevation of the papillæ; nevertheless, when the tongue is in that condition, or when it is covered with small ulcers, commonly called aphthæ, or when it looks red and glazed, or as if skinned, with or without a deposition of white fur here and there; these appearances, taken along with other circumstances, enable us to judge pretty correctly of the condition of the inner membrane of the alimentary canal.

Appearances on Dissection.

It can be safely said that there is not an organ or tissue of the body which I have not seen altered from a state of health in fever, and particularly in inflammatory fevers; and after what has been stated, and what has still to be stated, it is not thought necessary to say any thing further at present on this point.

Treatment of Inflammatory Fever.

Sydenham, whose book is one of the greatest ornaments which medical literature possesses, recommended, above a hundred and sixty years ago, the same, or nearly the same practice, which stands good in the present day. He was led by his great wisdom and experience into the proper line of treatment, although he had not the advantage which we enjoy, of examining morbid appearances after death to confirm it. He had erroneous notions in consequence of his unacquaintance with morbid anatomy, but he was the first man who pointed out the impropriety of treating all fevers alike, by shewing that different organs are affected in different cases. He also pointed out very precisely, that fever requires a different treatment in every stage as it advances. He also made pointed observations against the farrago of medicines which were generally prescribed, and his own plans were exceedingly simple. It was he who first introduced the plan of purging in fevers. His chief hope seems to have depended on the lancet, laxatives, and opiates, the strict antiphlogistic diet, and allowing no solid food. And if he could have proved his opi-

nions by an appeal to dissections, there would not have been, in all probability, so many changes in practice since his day.

An emetic, followed by gentle laxatives; a bland liquid diet; small doses of the solution of the tartrate of antimony; and perfect quietness, will produce a cure in very slight cases: but in severe cases, it is necessary to open a vein, and take away as much blood as will make an impression upon the disease, without reference to quantity. Young practitioners are often prevented from using the lancet, because there is no decided fixed pain; but they may rest assured in fevers, and more particularly in inflammatory fevers, that some internal part in particular is suffering, although it does not exactly appear to their inexperienced eyes. Local inflammation is often concealed by the general irritation and uneasiness which prevails; and it does not shew itself to a superficial observer till it has become very severe. We must not bleed in the manner recommended by the French, at least in inflammatory fevers. Boisseau, in urging the necessity of general bleeding, says, at p. 99, "Less than 8 ounces of blood should not be taken at each operation; this quantity will rarely suffice, it is necessary in general to draw 12 ounces; one may carry it to 16 ounces in subjects of whom I shall speak, *but one ought never to overstep this quantity. It is better to repeat the bleeding.*" I would also beg to refer to the cases published, along with the dissections, by Andral, Jun. in the 1st vol. of his Clinique, in which the deplorable effects of the expectant practice are too evident to require being pointed out. I have great respect for M. Andral's high talents and powers of observation, but have come to the conclusion that Dr Lerminier is a most unsuccessful practitioner. At some future period it is my intention to publish a fair criticism of Andral's cases.

The causes of the failure of bleeding in this, and other diseases, are; *first*, most physicians order the precise quantity of twelve or sixteen ounces of blood to be taken from all adults, without reference to sex, age, peculiarities of constitution, or the actual pathology of the disease; *secondly*, the long period which is allowed to elapse between the bleeding, diminishes the strength, without in the least degree eradicating the disease; *thirdly*, no difference is in general made between bleed-

ing a plethoric individual, and one who is in the opposite condition; *fourthly*, the period of the disease influences a pathological physician, while it does not another who never looks at the inside of a dead body; *fifthly*, the good effects of general bleeding are also very frequently lost, by not following it up in proper time by local bleedings, which are often found to be most efficacious; *sixthly*, the good effects of bleeding are often marred by neglecting to employ counter-irritation,—by confining the animal heat, by loading the patient with too many bed-clothes,—and by errors of diet.

The patient should be seen within a few hours after the first bleeding, and the operation repeated at a short interval, if necessary. If this is done, particularly if followed by laxatives, blisters, and the use of the tartar emetic, there will rarely be an excuse in inflammatory fever, however acute, to bleed a third time. But if, at the second and third visit, we find the patient so well as not to require further loss of blood, then we are not to conclude that he is out of danger; and it is necessary to impress upon the minds of students and young practitioners, that if they are to do good at all in such a case, the greatest attention must be paid at the very commencement of the disease; vigilance at this period will save much subsequent trouble and anxiety. When leeches are necessary, they should be applied as near the affected organ as possible. With regard to antimony, objections are very justly entertained against its use, when the stomach and bowels are either irritated or inflamed.

Some practitioners pinch their fever patients with respect to drinks, and some particularly with regard to cold drinks; but I believe this is a most injudicious prohibition, and that patients may be allowed to gratify themselves, in this respect, within due bounds.

The practitioner should be regular in his visits in all acute cases, as sick people watch the hours, and become impatient and dissatisfied till he makes his appearance; and he should be careful how he expresses himself, for one word, or even a slight alteration of countenance, may rob the patient of all hope.

When the state of collapse comes on in fever, the patient

should be carefully watched, that he may have his nourishment and medicines at proper intervals, and that the heat of the body may be properly supported. But the observations to be made hereafter, in the last stage of the mixed fever, may be applied by the reader to this case.

Stimulants are sometimes necessary at the termination of this class of fevers; but nothing in the Practice of Medicine is more difficult than to determine, whether a stimulant given in such a case is to do harm or good; and when it is given, let it be in small quantity, closely watching the effect. If I were compelled to state, whether most mischief would follow the exhibition of stimulants in every case, or withholding them, I could safely say, that giving them in every case would be most prejudicial; for although I have seen marked benefit produced by a stimulant, yet I have more frequently observed mischief.

CONGESTIVE FEVER.

This is a fever in which the pulse and the heat of the skin are generally below the natural standard in its most severe form; and in those which are slighter, the extremities are cold, or have a tendency to be cold, while the heat of the trunk of the body is increased. The purest example of congestive disease, to which I can allude, is to be found in the epidemic cholera of India; the next, in those individuals who die in the cold stage of the yellow, or of any other fever. The existence of congestion is also well displayed in the first stage of intermittent fever; and I have seen many cases of pure congestive fever succeeding to the cold stage of an intermittent, when the re-action could not develope itself as usual.

This complaint is a very common one in this climate, and one which is usually treated as a typhus. It is a disease which Sydenham knew well, and treated in the most judicious manner, as will be seen by consulting Swan's edition, p. 567, wherein, after stating that the invention of the term malignity, has been far more destructive to mankind than the invention of gunpowder, describes as clear a case of congestive fever, shewing the effects of proper practice, as is to be found in any

modern work. " But if it be inferred," says he, " that there is some malignity in the case, not only from the purple spots, but also from finding the symptoms of fever milder sometimes than should seem agreeable to its nature, whilst, notwithstanding, the patient is more debilitated than could be expected for the time, I answer, that all these symptoms only proceed from Nature's being, in a manner, oppressed and overcome by the first attack of the disease, so as not to be able to raise regular symptoms adequate to the violence of the fever; all appearances being quite irregular. From the animal economy being disordered, and in a manner destroyed, the fever is thereby depressed, which in the true natural order generally rises high. I remember to have met with an instance of this kind, several years ago, in a young man I then attended; for though he seemed in a manner expiring, the outward parts felt so cool, that I could not persuade the attendants he had a fever which could not disengage and shew itself clearly, because the vessels were so full as to obstruct the motion of the blood. However, I said that they would soon see the fever rise high enough upon bleeding him. Accordingly, after taking away a large quantity of blood, as violent a fever appeared as I ever met with, and did not go off till bleeding had been used three or four times."

This case proves beyond all doubt that Sydenham must have had very good notions of the pathological condition of the body, from the expressions he uses, as well as from the practice he employed.

This disease has also fallen under the observation of almost all tropical physicians, but of Dr Jackson in particular. It was in warm climates that I first obtained correct notions upon this subject. The profession is also much indebted to Dr Armstrong of London, for the very excellent manner in which he has illustrated the nature and treatment of this species of fever.

Phenomena of Congestive Fever.

We shall find, upon inquiry, that the patient has had a threatening of indisposition for ten days, a fortnight, or even three weeks, previously to confining himself,—that his ap-

petite has been gradually impaired, with irregular action of the bowels; and that he has complained of alternate chills and flushes of heat, till at length the chilliness prevailed. This is the history which we in general receive of the progress of the worst cases. Even in milder cases, the heat of skin is diminished; the pulse is weakened, or it is oppressed, and beats either quick, or perhaps not more than 50 or 60; the prostration of strength is very considerable; the tongue is in general moist, and more or less loaded; the patient is lethargic, rather than comatose, though coma may subsequently take place; he can be roused, but the sensibility is evidently diminished; he complains of giddiness, confusion of intellect, heaviness, and of pain or sense of weight, either at the crown of the head or forehead. The functions of all organs will be found to be more or less impeded; but disturbance of some particular organ, in general, manifests itself, and the symptoms must of course be thereby considerably modified, as in other febrile diseases. In congestive fever, as well as in others, the brain may be the seat of disease in one person; the lungs in a second; the liver and mesenteric vessels in a third; and so on, the disease being essentially the same, but modified according to the principal seat of the congestion.

Generally speaking, in congestive cases the expression of the countenance is well marked,—it looks besotted; the manner of the patient is undecided, with an appearance of carelessness, and his words seem, as it were, to hang in his mouth; the cornea looks dim; the pupil, generally speaking, is not contracted, in the first stage it is rather dilated, and is not much affected by light. If the patient attempts to walk, he staggers like a drunken man. There is always more or less prostration of strength, and in severe cases, he is unable to stand upon his legs, or to move his hand to his head even from the first. The respiration is short, quick, and weak. He often signifies that he has a great load in the præcordial region. As the disease advances, he becomes more and more comatose; picks the bed-clothes; and is always found lying upon his back, slipping down by imperceptible degrees to the foot of the bed; the surface becomes more cold; the breathing more difficult; the face assumes a leaden hue; and occa-

sionally, though rarely, convulsions take place; sometimes there is nausea and vomiting, and sometimes diarrhœa; most frequently, however, the patient is constipated.

It may be shortly mentioned, that the appearances on dissection are much the same as described in intermittent fever, only in a slighter degree.

With respect to the causes, it may also be noticed, that they are the same as in other fevers; but I have seen several very severe cases produced by bathing in the sea, and remaining too long in the water; by taking a drink of cold water; and by a weakly person exposing himself to a damp, cold wind, when his body had been previously heated.

Pathology of Congestive Fever.

No one can tell which is the first link in the chain of diseased action. Congestion may take place upon suddenly communicating a piece of disastrous news, which, some say, proves that a peculiar action in the brain is the first phenomenon; but, then, exactly the same circumstance happens occasionally after taking a cold drink, or upon remaining too long in the water when bathing, &c. &c.; therefore, it must be confessed there is a great deal of ambiguity about this part of the pathology. But it is unnecessary to go over the same pathological observations which were made when treating of intermittent and other fevers, further than to state shortly, that when the head is the chief seat of congestion, there are early symptoms of lethargy, coma, and a diminution of sensibility, followed by other well known nervous symptoms, and occasionally by convulsions. When the heart and lungs are loaded, there is an oppressed, irregular, or intermitting pulse; weak and hurried respiration; cough; marks of impeded circulation in the face, and a difficulty in supporting the heat of the body; and in some rare cases, violent pain in the region of the heart, and along the arms, so as to resemble the symptoms of angina pectoris; which symptoms were well marked in two cases published in my work on Puerperal Fever. It may be here remarked, that whenever the pulse feels weaker than natural in a severe disease, it is an excellent plan to place the ear to the region of the heart, for we shall often find it acting most

powerfully when the pulse is weak in the extremities. When the congestion affects the viscera within the abdomen, there is generally a sense of fulness and distension about the stomach; the bowels are irregular, being either too loose or bound; and in either case, when stools are procured, they are found to be clay-coloured and very fetid, with very little bile.

This opportunity may be seized for the purpose of noticing the most probable means which the animal system possesses, to prevent the lost balance of the circulation from taking place, and consequent congestion; *first*, there is a power possessed by all animals, of preserving to a certain extent a proper degree of heat under every condition of atmospheric vicissitude, —thus the heat of the body is not a degree higher under a burning tropical sun than in this country, which so far prevents cold from producing a lost balance of the circulation.

The elasticity of the blood-vessels, both arteries and veins, also tends to prevent the state of congestion, because they are capable of considerable distension, and are still contractile. The free anastomosis, too, which subsists between all the vessels of a part, tends to prevent congestion. This is well illustrated by the experiments which have been performed on the frog's foot, to determine the pathology of inflammation. When the part is at first irritated, the momentum of the blood is greatly increased; at last a vessel becomes obstructed, a globule of blood cannot pass through it, but is seen to make a retrograde movement, and to find its way on by another branch.

The pathology of this fever is illustrated in a very triumphant manner, by observing the phenomena which occasionally take place in eruptive fevers, and to which I shall make a short allusion. In some cases in the first stage, in which the eruption is tardy in making its appearance, convulsions take place. After the eruption has made its appearance, and every thing is going on well, it sometimes suddenly and prematurely disappears, when congestive symptoms become lighted up. Let the inquirer ask himself, where has the blood receded to, which a moment before rendered the skin as red as the shell of a boiled lobster?

Treatment of Congestive Fever.

In considering this part of the subject, it is very useful to remember the effects produced by congestion, and the efforts which are made by the powers inherent in the constitution to remove it, if it is in any way short of that degree which kills the patient instantly. The first of these, and the most common, is the state which in medical language is called re-action, which in its turn may create inflammation of the organ most affected with the congestion. We have next increased secretion, as a natural means of removing the congestion; as is well exemplified in the cholera morbus of India, in which an immense discharge takes place from the intestines and stomach, very much of the appearance of water in which fresh beef has been washed.

In the treatment of all diseases, the physician has to determine whether it will be best to leave the case to the natural efforts of the constitution, assisting them a little in their operations, or whether he is by a bold measure to step in to relieve the system at once, making choice always of the evil which is least to be dreaded. In this case, he is apprehensive that the heart and other vital organs may be too much overloaded and oppressed to create *full* re-action, or that the system will sink under the task. He has also to fear the effects of the re-action, which may terminate in extensive local inflammation; and therefore, anxious to escape these evils, he follows the plan which was pursued by Sydenham in the case above quoted, and he opens a vein with a view of at once restoring the lost balance of the circulation. The quantity of blood necessary for this purpose, in any given case, cannot be previously estimated. A stimulant may be at the same time necessary, to rouse the action of the heart a little, and to make the blood flow from the orifice; and I have proved on many occasions, before a number of witnesses, that it is not inconsistent with good pathology to bleed and stimulate at the same instant.

When a vein is opened, the blood will sometimes only trickle down the arm at first, but on other occasions it will spring from the orifice in a large stream, but it suddenly stops before a table spoonful is evacuated. Some think this

is owing to an alteration in the position of the arm,—others, to the tightness or slackness of the bandage. And in such cases, physicians are also in danger of attributing this phenomenon to debility, and they take it as the most certain sign that the patient will die in their hands, were they to carry the operation farther. But it must be recollected that the blood is moving very slowly in the arteries, while the veins are gorged. When the opening is made in the vein, it suddenly empties itself, and as the blood is not quickly replaced, no more flows in the same manner, but presently it begins again to trickle. Let the finger be placed on the orifice, the vein will be filled, and the blood will spring again. Heat is also to be applied, and if possible, the patient should be placed in a hot bath; if that cannot be obtained, the feet and legs should be plunged into very hot water, and hot bottles placed round the body, which is to be rubbed with stimulating fluids, such as spirits of turpentine heated, and aqua ammoniæ; drachm doses of ether may be given, or a solution of the carbonate of ammonia, in the proportion of eight or ten grains to the ounce of water. The patient should also be encouraged to drink warm fluids. The caution which ought to be pursued in drawing blood under such circumstances, need not be insisted on; suffice it to say, that a stimulant ought to be at hand, and a finger should be on the pulse of the opposite arm, to watch the effects.

If every thing goes on well after the bleeding, the bowels being in a proper state, calomel and opium may be given in pills containing two grains of each substance, and repeated every three or four hours.

If, at any time in the subsequent progress of the case, there should appear signs of local disease, the application of leeches and blisters should be had recourse to, and the patient is to be treated during convalescence in the same manner as in any other fever.

MIXED FORM OF FEVERS BETWEEN THE THREE LAST MENTIONED, BUT IN WHICH CONGESTION PREDOMINATES AT LAST, COMMONLY DENOMINATED TYPHUS AND SYNOCHUS.

In the disease which is now to be sketched, there is a combination of the three last described fevers, appearing under two forms:

1*st*, The functional fever, subsequently united with congestion, and this forms, I apprehend, the Typhus of authors.

2*dly*, The inflammatory fever, subsequently united with congestion, and this is the Synochus of authors.

The first variety begins in the manner which has been already described in fevers from functional derangement, but subsequently, the balance of the circulation becomes more and more lost, when all the symptoms of congestive fever take place, after the patient has been debilitated by the previous affection.

The second variety commences in the manner which has also been already described in inflammatory fevers, but subsequently the balance of the circulation becomes more and more lost, and congestion follows; in which state of the system, inflammatory action is suppressed, but not extinguished, and this takes place when debility and exhaustion have been already produced by the previous diseased action.

The head, lungs, and organs in the abdomen, are equally liable to be implicated, and in the worst cases which occur, they are generally all implicated, either at once or successively; hence there is a complication of symptoms, and as the disease principally affects the poor, who are ill clothed and badly fed, and as medical advice is not in general sought during the first stage of the disease, we usually find it very difficult to manage.

It is unnecessary, in this part of the work, after the minute account which has already been given, to offer any description of this form, further than to state, that the head and lungs, but particularly the mucous membrane of the lungs, suffer most, and that sub-acute inflammation almost always takes place in some organ before the termination of the first week.

In the first stage of the first variety, and when any thing like active practice is only to be had recourse to, the symptoms certainly denote debility, which are as yet only occasioned by oppression; and often have I seen cases immediately and permanently benefited by drawing blood, in which, had the operation been postponed for twenty-four hours, it would have been quite inadmissible. It ought also to be remarked, that much of the oppression and debility also depends on the pathological condition of the lungs, which, besides being congested and unable to perform their functions properly, are subsequently still further embarrassed by an inflammatory affection of the bronchial tubes. Both these conditions tend to prevent the changes in the blood, which are well known to be elaborated in the lungs; therefore, all organs must suffer additionally, and the brain of course, among others. The bronchitic affection in fever has attracted my attention for upwards of fifteen years, during which period I must have seen a very great number of fever cases; and I am led to believe, that few instances of febrile affections take place, without bronchitis appearing in some stage of the disease, and very often it is the primary affection. In all the fevers which are called putrid, and which are accompanied by dark-coloured spots on the surface of the body termed petechiæ, it will be found, I am almost inclined to say invariably, that bronchitis prevails to a great extent. The somewhat livid and circumscribed redness which is seen so often in the fevers called typhoid, is also most frequently owing to the embarrassed state of the lungs; and exactly the same thing takes place in the second variety, the synochus. In this last, bleeding may be had recourse to later in the disease with benefit, and often have I seen it done with success, after cases were going wrong under the injudicious use of stimulants and tonics. In proof of these statements, the reader is referred with confidence to Dr Mason Good's account of typhus, in his second volume, (from page 230 to 258,) who nevertheless seems to have entertained very different pathological views on this subject. According to him, this is "a disease of sensorial debility, leading on to putrescency;" it is to be treated by tonics, and "bleeding and purging are among the foremost objects of

prohibition." Nevertheless, in the next page (240,) he makes the following contradictory statement, "hence the fever will be aggravated from local irritation, and the affected organ will be in danger of inflammation, if not of gangrene."

There is no class of diseases in which the stethescope is of more practical advantage than in fever, for, as has been already mentioned, the heart may be found to be beating violently, while the pulse at the wrist is so weak as scarcely to be felt, and when symptoms of general debility appear to be very great, and the extremities cold. To a patient in such a state, most medical men would naturally be led to give wine, beef tea, and animal jellies, which they would not do if they were aware that the action of the heart was strong. During the last five years, I have seen many cases of fever treated under such erroneous views, in which marked benefit was produced by withholding these stimulants, and the patients have ultimately recovered after being leeched and blistered. It has also occurred to me to be called in consultation to cases of "idiopathic" fever, in which I have not only detected, but have convinced the practitioners, that active disease was going on, most generally bronchitis; and I shall never forget two cases of "idiopathic typhus" which I was requested to see, in which unfortunately my diagnosis was verified by dissection, in one of which the patient died of pleuritis and bronchitis conjoined; in the other, of peritonitis. Let it not, however, be supposed that I am an enemy to stimulants in all cases of fever; on the contrary, it has occurred to me to see patients occasionally snatched from the grave by their judicious employment. What I wish to impress upon my readers, is, that in all fevers we have more to dread from local congestions and inflammations, than from debility and putridity. That I am in the habit of using stimulants in fever, I can appeal to the gentlemen who have been my pupils, and who have witnessed my practice; and I can also appeal to them for the truth of the following statement;—that much mischief has occasionally followed, and that therefore I feel fully as anxious about the result of a stimulant as of a bleeding. When a stimulant is necessary, wine is the best; and experience has taught

me that wine, or any other stimulant, is far less likely to do harm than beef tea and animal jellies.

Cases can no doubt be quoted, where stimulants, in large quantities, have been administered from the beginning of the disease till the patient recovered. But the best way for any one to come to right conclusions regarding this question, is, to judge from the result of what he has himself seen. I have witnessed all plans of treatment, and that which I conceive best has been detailed. It has occurred to me repeatedly, to observe that recoveries were slower, and relapses more frequent, in cases treated upon the stimulating plan, than the antiphlogistic.

Emetics cannot be too highly extolled in the last stage of some of the cases of typhus and synochus, but only in some of them in which the bronchial tubes become filled with mucopurulent matter in consequence of the patient being asleep, and not coughing it up before too much has been secreted. Many of my friends have seen the happy results of administering emetics in such cases, and more particularly, my dispensary pupils will not forget many instances of this among our poor patients during the late epidemic in Edinburgh.

Cleanliness, free ventilation, and quietness, are three great and essential circumstances to be attended to in the treatment of fever. The alvine evacuations should be removed instantly out of the room; and it is of great consequence to attend to the quantity of bed-clothes, that they be not too great in the first and second stages of fever when the skin is hot, nor too little when the patient is even approaching to the state of collapse. The extremities should be examined at every visit by the physician, as sometimes the symptoms are aggravated in consequence of cold limbs, which will perhaps require no other remedies than the application of hot bricks, or bottles filled with hot water. The state of the bladder should be attended to, for although the urine is generally suppressed, yet occasionally it is not so. The temperature of the room can scarcely be too cold in the first stages, but I have often seen much injury produced by keeping it at too low a temperature in the stage of collapse. Many a patient has been strikingly benefited in less than half an hour after their bodies were made warm, and perhaps their lives ultimately saved, without

the assistance of any other means; and many patients, from the same cause, owe their death to being removed from a warm and ill-ventilated room into the ward of an hospital; so that I am often obliged to run all hazards from bad air, bad nursing, and filth, rather than send my patients to the Infirmary of Edinburgh, which is ill constructed for any class of patients whatever. The sick are also badly classified, which is no fault of the medical attendants, who must be well aware that the temperature of a ward, calculated for fever cases in the first stage, is too cold for those in the last. Every fever ward of great extent should be warmed by means of heated air, and provided with water-closets for the use of convalescents.

For a considerable time it baffled me to account for the discrepant histories of fever which have been handed down to us, and for the confidence with which opposite practices have been recommended to our notice; but further experience has convinced me that these things are owing principally to the five following circumstances:—

1*st*, To a difference in the character of the prevailing epidemics, and the constitutions of the persons affected; for example, a functional fever will bear remedies which would kill a person labouring under an inflammatory fever, and it would be still worse if the inflammation affected the brain. A stimulant given in congestive fever may operate beneficially; whereas in functional fever, or in inflammatory fever, it would be very injurious. A well fed, and previously healthy soldier, who has no cares, will in general have a high-toned fever; whereas a poor, ill-fed, and badly clothed labouring man, worn out by cares and anxieties, and living in an ill-ventilated and filthy apartment, will be affected with one of an opposite character.

2*dly*, By an arbitrary and too often empirical practice, which has been hinted at before. One physician always bleeds in all fevers, another stimulates in every case; and when the results are analysed, perhaps it will be found that the proportion of deaths is the same, and even these results will vary to support the one practice or the other, according to the habits and constitutions of the patients; for instance, if our army

and navy surgeons were to stimulate throughout the course of the fevers they have to deal with, they would scarcely save a patient; and if practitioners entrusted with the care of the sick poor were to bleed all their cases of fever, they would be quite as unsuccessful.

3dly, Writers are too often guilty of an error which all medical men are liable to commit, viz. of mixing up opinions with matters of fact in their statements.

4thly, From the prevailing habit of drawing sweeping conclusions from one or two facts.

5thly, By unphilosophical attempts to bolster up erroneous views by special pleadings.

The proportion of deaths in fever, in my Dispensary practice, from the beginning to the termination of the last severe epidemic in Edinburgh, was as follows:—

Out of the first hundred and forty cases, there was only one death. This patient was anxiously attended by Mr Glover, a respectable practitioner in this place, who was then my assistant; he died during a relapse after he had sat up. The proportion of deaths, however, subsequently increased, so that last November "1827," the calculation of deaths was 1 in 37. This included several individuals who were in the last stage before we were applied to; a girl who died during a relapse from accidental loss of blood after the application of leeches; an old highlander, who would take no other medicine than his own mountain dew; and an old woman above 60, who, when convalescent, took a shivering fit, and died shortly afterwards. The appearances found on dissection, in these fatal cases, were as follows: In two cases there was well marked arachnitis, by extensive effusion of coagulable lymph, which was deposited between the arachnoid and dura mater. In both of these there was great vascular turgescence; some effusion into the ventricles; and in one there was the white ramollisement in the centre of the brain. In two men, and one old woman, the vessels of the head were very much congested, and the pia mater, throughout its whole extent, had its vessels amazingly distended with dark blood. The preparations were dried on glass, and can be seen in this state even now. In all three, there was some effusion under the arachnoid, and into the

ventricles; and on slicing the brain, an unusual number of large bloody points were observed: in the three, there was also bronchitic effusion, and in one, a considerable portion of the lungs was in a state of softening, and intensely red. In the old woman, there was little disease in the mucous membrane of the stomach and bowels; but in one of the men, there was extensive vascularity of this membrane, but no ulceration: the mucous membrane of the stomach was much corrugated, and the whole of the splenic extremity was studded with red points, which were seen through a great quantity of thick viscid mucus, which, when washed off, and the stomach stretched, shewed the red points to be vessels, which existed in immense numbers; the vascularity was greater, however, in the mucous membrane of the bowels, particularly throughout the whole of the ileum, and a great part of the colon. In the other man, when the abdomen was opened, the small intestines had a black appearance, as if in a state of mortification; they were found to be filled with a bloody-looking exudation, which, from its weight, had borne them down into the cavity of the pelvis. It was thought at first that this matter was the sole cause of the discolouration; but upon cutting open the intestine, it was found that it owed its colour principally to its great vascularity; there were no ulcerations. There are dried preparations, and drawings of the appearances in this case, in my museum. In a number of other cases, there were ulcerations in the ileum and colon, of which also the preparations and drawings are in the museum; and, I confess, I am inclined to believe, that if these things were properly looked for, they would be more frequently seen. In one case, the kidney was found enlarged, as well as the ureter, and on cutting open the pelvis, it was found to contain about six ounces of pus, and the inner membrane was very vascular. In the body of the old woman, who, it has been above stated, died suddenly during convalescence, the chief diseased appearance was, that both lungs were found, on opening the thorax, to be as black as they usually are when affected with melanosis. I was not at the dissection, being engaged at the time in delivering a lecture; but Dr Crellin, who conducted the dissection, sent for me, and I proved to all present, that this appearance was not melanosis, but produced

by venous engorgement; and I had never before seen the whole of both lungs so completely congested; they sank in water, but after washing them, they regained not only their natural appearance, but their proper degree of buoyancy. The characters of the ulcerations shall be stated in the second part of the work, when treating of inflammation of the mucous membrane of the stomach and bowels, where I shall also mention a fact, now well ascertained, that particular parts of the mucous membrane are more liable to be affected by inflammation and ulceration than others. In the mean time, I shall lay before my readers the copy of a statement made in the 1st volume of Andral's Clinique, p. 378.

In 10 subjects the stomach was the seat of ulcerations.
1 the duodenum.
9 the jejunum.
38 the inferior part of the ileum.
15 the cæcum
4 the ascending colon.
11 the transverse colon.
3 the descending colon.
1 the rectum.

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HECTIC FEVER.

This is a fever which is generally supposed to be symptomatic; even Cullen embraced this opinion. It may be defined to be febrile symptoms occurring in the course of some chronic disease, when the patient is much debilitated. Heberden states that irritation in any diseased organ will give rise to it. An opinion has been pretty general, that hectic fever is produced by no other cause than the absorption of pus; and when pus was not found upon dissection, it was hastily concluded that it had existed, but was all absorbed; or that hectic fever was sometimes idiopathic. My own belief is, that this com-

bination of symptoms has no necessary connexion whatever with pus; and according to my experience, it most frequently (although certainly not always) depends on inflammation of the mucous membranes, occurring in the course of the original disease.

Phenomena.

Hectic fever is attended with great and increasing debility; a weak quick pulse; each paroxysm commences with chilliness, which is succeeded by re-action, and which is almost instantly followed by copious perspiration, which, it may be mentioned, is at all times easily excited by any exertion. The surface is pale, except the cheeks, which present what is very aptly styled the "hectic blush." The appetite is bad, the stomach is occasionally very irritable, and in nine fatal cases out of ten diarrhœa comes on during the course of the disease. The discharge from the bowels is very fetid. The breathing is anxious. The patient is generally restless, and complains of pains that are ascribed to rheumatism.

It is said that this disease is liable to be confounded with intermittent fever; but the history of the case, and the appearance of the patient, will put any practitioner right.

Treatment.

As hectic fever depends upon a morbid condition of some structure of the body, our attention must be directed to it. For instance, surgeons very often cure patients of hectic fever, by cutting off a limb in which disease had caused the constitutional symptoms. It is the chief business of the physician, however, to alleviate the patient's sufferings; and there is no case in which the difference is so strikingly shewn between routine practice, and that which is directed by sound pathology.

The routine practitioner will be invariably found to treat some of the symptoms. The patient has no appetite, and he will give him a tonic to make him eat;—he is troubled with his bowels, having six or eight watery fetid stools in the course of the day, and for this he will prescribe an astringent mixture;—his urine is scanty, and he must of course have a di-

uretic draught at bed-time; and as he is much weakened by perspiration, it is absolutely necessary that he should have acid drops. A pathologist, it must be admitted, is often obliged, in the present state of our knowledge, to act empirically; but his remedies will always be found to be few in number. If the patient has diarrhœa, he will endeavour to ascertain upon what morbid state that symptom depends; if there is pain in the abdomen previous to an evacuation; if the pain is increased by taking a cold drink; if the tongue is red and glazed; if there are apthous ulcers in the mouth and throat; if the stools are mixed with mucus, or are watery and fetid, he knows he has to treat inflammation, and probably ulceration of the intestines, which leads him to apply a few leeches to the abdomen, if the patient has any strength, or to use counter-irritation; and then, if there is any remedy that he knows will relieve the patient, that remedy he will prescribe. It is truly laughable to see the symptomatical physician, one day treating the diarrhœa with astringents, and the next waging war against the perspirations.—This subject will be more fully illustrated hereafter. Opiates, of course, are frequently of considerable use in soothing the patient's sufferings.

GENERAL PATHOLOGY OF ERUPTIVE FEVERS.

The diseases which fall to be described under this head, however they may differ in the appearance and form of the eruption, have a certain general character common to all, viz. that febrile symptoms precede the eruption, which continues for a few days, and then declines.

According to the humoural pathology, the fever is produced by a concoction of the humours, and a peccant matter is thrown to the surface, which forms the eruption. Other pathologists look upon these diseases as peculiar and essential affections of the epidermis, which is followed by inflammation of the chest and its accompanying fever; and they account for

the sore throat that occurs in some, by its continuity between the skin and the internal organs which are affected.

My own opinion is, that the eruption ought to be regarded as a mere symptom of this class of diseases, yet it cannot be denied that there is something very peculiar in them,—peculiar in as much as the eruptions present external characters differing from each other, as well as from other eruptions, and that they occur only once in a lifetime. After a long and patient investigation, comparing the symptoms with the appearances found on dissection, I have come to the opinion, that the mucous membranes are the seat of the disease, and that the nature of it is inflammation, more or less acute and extensive; and that the part generally most implicated, is the mucous membrane of the lungs, in Measles and Small-pox; perhaps less so in Scarlatina and Chicken-pox; while that of the bowels is the part chiefly, if not principally, affected in Urticaria, Roseola, and Miliary Fever. The eruption is merely to be regarded as a symptom, and by no means an universal symptom, in these affections. It is well known that many cases of Eruptive Fevers are very mild, and require little treatment, while others are extremely severe and fatal; and that a great deal depends upon the eruption, whether it comes out at the usual period, and whether it remains out, or prematurely and suddenly recedes. In point of fact, I regard the eruption as a natural blister, or counter-irritant, which is produced by powers inherent in the constitution, which enable it to throw off so much of the disease from an internal organ, the functions of which are immediately necessary to life. Even in cases which subsequently become mild, but in which the fever preceding the eruption is very severe, attended with threatening thoracic, and it may be, cerebral symptoms; these become much mitigated upon the appearance of the eruption. In some very mild cases, the internal disease is so very slight, that little or no constitutional disturbance is excited before the appearance of the rash. In such cases, I conceive the eruption is in proportion to, if it does not exceed, the amount of the internal disease. This may be stated without reference to the quantity of the eruption, except perhaps in Small-pox. The eruption is produced by inflammation of the cutis, and con-

sequently must take off so much of the determination of blood, and so much of the diseased action from the internal organs.

These circumstances, it appears to me, are clearly proved; 1*st*, By attending to the constitutional commotion and oppression over the whole system, and the morbid changes in the functions of various organs, for many days before the appearance of the eruption.

2*dly*, By the relief afforded, in general, after the free developement of the eruption.

3*dly*, By the increased suffering and danger which exists when the eruption is deficient, or when its repulsion suddenly and prematurely takes place.

4*thly*, By the relief which follows proper treatment; and,

5*thly*, By the appearances observed on dissection.

With respect to the first of these points, it may be stated, that the eruption does not appear in general till the third, fourth, or fifth day of the complaint, and during that time, the patient labours under the combination of symptoms denominated fever, and suffers from the impeded functions of all organs; all the symptoms denote internal disease. And that the respiratory organs suffer very considerably, may be discovered by the state of the respiration, the cough, the anxiety and colour of the countenance; but more particularly by auscultation, which will announce bronchitis in its first stage. In this stage, which is called the eruptive, there is also very frequently head symptoms, aunounced by the patient being delirious, lethargic, or even more or less comatose; and it is by no means uncommon to see convulsions, or other serious nervous symptoms come on, at the period at which the eruption ought to have been fully developed, but has not yet appeared, or has only partially come out.

As to the second point which has been offered in proof, it is to be observed that the symptomatical physician will not be inclined to receive this in evidence in favour of the views which I wish to establish. He will say there is no relief; and in so far he will say truly, because the eruption is occasioned by inflammation of the skin, producing great irritation, and very often an increase of the febrile symptoms; that is to

say, the person will complain more of thirst, restlessness, and uneasiness, than previously; but still a pathological eye will discover relief,—relief produced by translation of a part, and perhaps a great part, of the diseased action from internal organs to the surface. The symptomatical physician will point out to us that the respiration is still hurried and short, but we may be able, after an examination of the lungs, to assure him that there is less congestion of the lungs, and less inflammatory action in their mucous membrane, than before; and that the state of the respiration which he has noticed, is now produced principally by the hurried circulation through the lungs; so that, pathologically speaking, he is relieved. A common blister, when it is sufficiently large, and is acting beneficially, very frequently increases the patient's sufferings, while it has mitigated the disease.

The third point of proof is the acknowledged danger which exists when the eruption is deficient, or when its repulsion has taken place. Dr Gregory, in his lectures, when treating of Scarlatina, used to make the following statement: "We find a connexion similar to that between the efflorescence and other symptoms in this disease, existing between the eruption and general affection in Measles, for there it is not critical, but is accompanied with an alleviation of the symptoms, which is greater or less according to the degree of the eruption; and all the symptoms are very much aggravated by the repulsion of it." Indeed, if the reader will refer to any author who has written upon this subject, he will find, that in the worst forms of this disease, and which are described under the terms Scarlatina Maligna, Scarlatina Anginosa, and Putrid Measles, the eruption is either wanting altogether, or it appears at irregular periods, but is seldom permanent; and it is in these severe cases that we meet with what are called typhoid symptoms, diarrhœa, with hemorrhage from the nose, mouth, or bowels. The first question which it is natural for an inquirer to ask, is, by what cause is the danger produced? It appears to me, that the reply is very easily made. There has been lately a considerable and extensive inflammatory action going on in the skin, which required a determination of blood to support it.

During this time the symptoms were not very severe; but the moment that the blood forsook the surface, it was marked by increased internal distress; the respiration became more laborious; and the patient more or less comatose, perhaps completely apoplectic. Is it not quite natural, therefore, to conclude, that these effects are produced by the sudden determination of blood taking place towards internal organs, which may terminate in complete venous congestion and consequent death; or in partial congestion, which will end in inflammation of one or more organs, if the eruption is not brought back? but it will be that kind of inflammation which I have described to be suppressed, and which cannot fully develope itself. The external symptoms will lead a symptomatical physician to stimulate and give tonics, when a pathologist would try the effect of the hot bath, stimulating frictions, and bleeding by leeches, if he could not open a vein; and he would also apply blisters. It may be here noticed, that many individuals suppose that blisters act by "rousing the vis vitæ," and by raising the strength, whereas they operate by translating diseased action to the surface.

The fourth point in the evidence, is the relief afforded by proper treatment. When the eruption is repelled from the surface, we first use all the means within our power to recall it; the warm bath and stimulating frictions are first employed. But the warm bath, which is the principal thing to be depended on, may not be at hand, or we may have tried these remedies and failed; but we ought not to delay long under any circumstances, if the rash is not speedily re-produced, to open a vein, particularly if the patient is above two years of age, and a vein to be found; if not, we must depend upon leeches, warm bath, and blisters. By opening a vein, however, we prevent a great deal of mischief and risk to the patient; as we cannot recall the blood to the surface, we reduce the quantity of it in the whole system, and thereby remove the congestion from organs; alter the determination of blood; and then assist the system increating re-action, if necessary, by the addition of a stimulant. But all this, to produce benefit, must be done instantly; every moment that is lost diminishes the chance of

success. I am entitled to speak strongly, from the great success which has attended the treatment here recommended, not only in my own practice, but also in that of many of my pupils. Although many of these cases could be quoted in detail, yet the perusal of the following case, translated from the Clinique Médicale, by Andral jun. vol. iii. p. 72. will make a greater impression upon the minds of my readers. This case is entitled, "*Acute bronchitis; Measles; Premature disappearance of the eruption; Fatal dyspnœa.*"

"A baker, æt. 20. of a strong constitution, was affected within the last five or six weeks with slight diarrhœa; presented on the 10th April all the precursory symptoms of measles, redness of eyes, flow of tears, coryza, hoarseness, cough; and continued in this state for the three following days. On the 14th, the eruption appeared, and the patient took to his bed. On the 15th, his whole body was covered, and in the evening he was admitted into the Charité; when he had a confluent, well-marked eruption; hardness and quickness of the pulse; redness of the tongue and lips; and a strong cough; there was otherwise no alarming symptom. Towards the middle of the night, the patient experienced, all of a sudden, an oppression, which rapidly increased, and on the following morning we found him in a state of partial asphyxia; the eyes prominent; the face violet colour; respiration short and very frequent; cough nearly constant; little mucous expectoration. Percussion elicited the natural sound through the whole of the chest, but the mucous rattle was audible, in different points, by means of the stethescope. There remained only a few pale spots of the cutaneous eruption, which were fast dying away. The pulse preserved its frequency and hardness, and the tongue its redness. This train of symptoms seemed to indicate the existence of pneumonia; nevertheless the pathognomonic signs of this complaint were completely wanting.

Could a simple bronchitis occasion by its extreme acuteness or sudden exasperation, so much dyspnœa? and might not this inflammation, joined to that of the alimentary canal, account for the complaint with which the patient had been so violently attacked? Be this as it may, the indications of

treatment were clear; to lessen the internal inflammation *, and *to effect a return of that on the skin.* With this object, twenty leeches were applied to each side of the chest, and ten to the epigastrium. After the blood had ceased flowing, a blister was applied to each leg, and the skin all over rubbed with a lineament of ammonia. Marked relief followed the use of these means; in the evening the respiration was much less impeded, the cough less frequent, and the tongue had lost its redness. The eruption, however, had not returned.

17*th*, The patient presented the symptoms of a severe bronchitis, accompanied with fever; the respiration was only slightly accelerated.

18*th*, The fever was reduced to almost nothing, and the opaque expectoration announced the speedy termination of the bronchitis. In the evening, the respiration suddenly became very difficult, and twelve ounces of blood † were abstracted from the arm. The next morning the dyspnœa was still very considerable, and the pulse had become more quick. Two blisters to the thighs. During the whole of the day, the sense of suffocation continued to increase.

20*th*, Face extremely livid, violet colour of the lips, orthopnœa; from the appearance of the patient, one would have thought that he was dying of aneurism of the heart.

Inspectio cadaveris.—The mucous membrane of the larynx, trachea, and bronchial tubes, and of the smaller ramifications, were of a scarlet red. In a few points at the beginning of the division of the bronchia, there was a small number of white concretions, and resembling the false membrane found in croup.

The lungs were sound and crepitated throughout their whole extent, posteriorly they were gorged with blood. Heart natural; clots of blood of a deep black in the right cavities; stomach white, as well as the small intestines, which

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* If the distinguished author had said congestion instead of inflammation, and if he had used depletion without delay, by opening a vein, instead of applying leeches, he would have altered the determination of blood, and relieved internal organs.

† It is to be regretted that this was not done two days earlier.

contained a great number of ascarides and lumbrici, in the lower portion; the cæcum contained several worms, (tricocéphales); its mucous membrane presented a red spot near the valve, from which arose three or four small conical vegetations, three or four lines long. The rest of the large intestine white, and filled with liquid feces. Liver gorged with blood. Spleen large and firm. A great quantity of serum infiltrated into the subarachnoid cellular tissue; the cerebral substance was not at all injected; the lateral ventricles, especially the right, were distended by much limpid serum."

The fifth point of evidence rests upon the appearances found on dissection; and it may be shortly mentioned here, that these consist of all kinds of lesions of the brain and membranes, usually produced by acute and sub-acute inflammation. The same observation may be made respecting the organs in the thorax; and within the abdomen, the chief diseased appearance to be observed is in the mucous membrane, particularly of the large intestine, which is inflamed, sometimes ulcerated. But in no case does the pulmonary system escape. The appearances in the brain and abdomen are not so universal, and may depend upon the impeded functions of the lungs, as will be shewn hereafter.

If these things be true, it ought to be expected, carrying the same principles forward, that bleeding to a sufficient extent, and at proper intervals, ought not only to relieve the constitutional symptoms during the eruptive fever, by curing the disease which produces them; but also after the eruption has appeared, we ought to be able to destroy it. Observations and experiments frequently performed and repeated by myself, and by my pupils, enable me to state, that these are facts, which I shall not be afraid to repeat before the highest authorities in the profession, and stake my professional reputation upon the general result of the plan; having already seen recoveries take place, under this treatment, in cases in which such a happy termination was scarcely to be anticipated. It also follows, if these things be true, that even in ordinary cases there are two periods more critical and dangerous to the patient than any other; these are, the period at which the eruption ought to make its appearance; and that at which it should

naturally disappear. In the first case, the internal disease has gradually become extensive and severe, and wants relief by means of the eruption. In the second, the disease which had existed at first, having been relieved by the external irritation, is now in danger of being re-produced by its cessation; and this of all others is the period at which, in the slightest form of the disease, the patient stands in need of active practice.

This pathological description, if it should appear deficient, is only so, I am convinced, from the want of sufficient illustration, which can only be done in a lecture or separate treatise upon the subject. It is introduced in this place to prevent repetition, when treating of each of the diseases which fall now to be described.

SCARLET FEVER.

This term is employed to express a disease attended by a fever, sore throat, and a red rash, which rash appears sometime between the second and fifth or sixth days of the disease, first upon the face and neck, and progressively spreads over the body, terminating between the seventh and tenth days. The rash has very much the appearance of the shell of a boiled lobster, and frequently there are minute vesicles. The inflammation of the throat sometimes runs into ulceration and sloughing.

The literary history of this, or of any other disease, is of little importance in comparison to an intimate acquaintance with the pathology, and proper means of treatment; therefore, I shall proceed to describe the phenomena, without caring from whence the disease came, or in what century it first appeared, further than to notice that Scarlatina and Measles were formerly confounded together, from their mutual pathological resemblance. Sydenham appears to have been the first who gave this disease the name of scarlet fever, as well as a distinct description of the affection, pointing out the

circumstances with sufficient precision in which they differ. Sydenham, however, and all the authors of systems, including Dr Mason Good, have been guided more by external symptoms, than by pathological investigations.

The term Scarlatina, notwithstanding the philippic of Mason Good, is quite as good as his term of Rosalia; it affords us an example of what is by no means rare, of a disease receiving its name from one symptom.

Scarlatina has been divided into three species, viz.

Scarlatina simplex.

——— anginosa.

——— maligna, which last is confounded with the disease termed Cynanche Maligna. My chief objection to these terms is, that they do not spring from pathological considerations; and it may be said in the language of Dr Hamilton Sen. (not the Professor,) that "it is altogether foreign to my purpose to engage in this controversy; and more so, as the distinction begins to lose ground, as our knowledge of the disease becomes more comprehensive and accurate. The time may not be far distant, when scarlatina will be received as the generic disease, the full history of which will include the more aggravated symptoms as they appear in scarlatina anginosa, and in cynanche maligna; in the same manner as the history of variola comprehends the varieties of the distinct and confluent small-pox."

Scarlet fever is a fatal disease, and more particularly so, it is said, in this city. The plague is scarcely more dreaded at Constantinople than scarlet fever is in Edinburgh; not because the disease is peculiarly severe, but that the pathological notions which have been taught in a dark age, still prevail, and that we have not kept up our knowledge with the improvements since made in pathology.

In eruptive, as well as other fevers, there are two grand varieties, which may be named the congestive and the inflammatory; and sub-divisions might be made by different combinations of these two.

In the first, the congestive form of scarlatina, the patient complains of oppression, and so much debility, that he cannot support himself. Rigors more or less severe accompany these

symptoms. The face is pale, the features sharp, the eyes hollow, and deprived of their accustomed animation; the surface cool, the extremities being perhaps quite cold, while considerable heat is felt on the trunk of the body; the breathing is performed with more or less difficulty; the pulse is soft, and perhaps weak, although it is sometimes strong; the tongue has a whitish shrunk appearance, perhaps loaded. If the patient utters complaint at all, it will be of universal prostration and of headache, or weight on the top of the head, together with oppression at præcordia. It may be stated, and with some plausibility, by that class of practitioners who are led only by symptoms, that those just described do not denote the existence of scarlatina; to which it may be replied, that one individual of a family will display such symptoms, while others are labouring under the disease in the ordinary form; the same appearances have also come on in the course of scarlatina, upon the sudden disappearance of the rash; and further, the cessation of the congestive symptoms have been witnessed upon the re-production of the rash; which phenomena have occurred so often, that I am compelled to receive them as part of the medical evidence. I have only had one opportunity of examining the body after death, in a subject who fell a victim to this form of the complaint. The throat was found to be only very slightly ulcerated. There was considerable distension of the veins in the abdomen, the lungs were much congested, and the vessels of the head were remarkably distended with dark coloured blood.

The pure congestive disease is rare, but it is very common to see the mixed disease, that is, a combination of the inflammatory along with the congestive symptoms.

The second or inflammatory form of scarlet fever, makes its attack in the following manner;—rigors, or only slight chilliness, followed by more or less pyrexia, restlessness, want of appetite, thirst, want of sleep, headache, some degree of nausea, oppression at the præcordia; tongue at first slightly loaded, red, with raised papillæ; or it may be much loaded with a yellow fur, and intensely red at the tip and round the edges. Soreness of the throat is complained of, sometimes as the first cognizable symptom; it is either slight-

ly swollen and much inflamed, or of a dusky hue, without much swelling; ash-coloured ulcerations may often be discovered, but we must be upon our guard not to mistake exudations of coagulable lymph for ulcerations. In the generality of cases, there are evidences of sub-acute inflammation in the larynx and bronchii, which is always announced by difficulty of breathing, by the sound of the voice, and by the cough, but more particularly by auscultation; but the inflammation in the bronchial tubes is not so decidedly marked in all cases as it is in Measles and Small-pox. Sometimes there is delirium, but only perhaps during the course of the night, and sometimes some degree of coma. These symptoms may continue for 2, 3, 4, 5, or 6 days, before the rash makes its appearance. Sometimes, indeed, the eruption is the first symptom which announces the complaint, but according to my experience, these are the mildest cases. In general, however, the eruption appears on the 4th or 5th day, and in many cases mitigates the symptoms for the time.

The eruption is of a scarlet colour, first to be observed on the face and neck, and in the course of twenty-four hours it becomes pretty generally diffused, patches appearing here and there more intensely red than the surrounding parts; on pressing with the finger a white mark is left, but the redness returns in a moment afterwards.

After the eruption has existed from 3 to 5 days, it begins to decline, and the cuticle to separate, and peel off. As has been already mentioned, this is a very dangerous stage of the disease, and would be still more so, were it not that the eruption declines gradually, and that the circulation on the surface is still actively employed for a time, in the formation of new cuticle for the whole surface.

Dr Gregory, in his lectures, used to state, that "a copious efflorescence is a favourable symptom; when it is deficient the symptoms are more severe, and when it is repelled, it never fails to aggravate both the general fever, and the topical affection of the throat." "It is not an easy matter," continued he, "to explain the connexion which subsists between the efflorescence and the other symptoms; it is not critical, but all the symptoms are much relieved by its coming out copiously."

Occasionally anasarca, and more rarely ascites, follow in the second or third week after the decline of the disease, which are attended with constipation, scanty urine, languor, nausea, general uneasiness, and other symptoms which have been denominated Secondary Fever.

Appearances on Dissection.

In the numerous dissections which have fallen within my observation, the inflammation and ulceration in the throat have not generally appeared of such importance as had been imagined before death. The most constant diseased appearances have existed in the air passages, presenting inflammation in its different stages; viz. vascularity, thickening of the mucous membrane, and occasionally ulceration; in two cases I have seen the epiglottis nearly destroyed by ulceration; and also effusion of thick, tenacious matter filling up the air passages to the bifurcation, and often lining the trachea. Sometimes the substance of the lungs is seen inflamed, and occasionally the pleura, but the inflammation in these two tissues is not so frequently met with, and is to be regarded more as an example of acute action, extending from one tissue to another by contiguity, than as forming essential parts of this disease. The lungs are sometimes so much gorged with blood, as to have lost in a great degree their natural appearance and buoyancy. In the brain there is sometimes arborescent vascularity, with turbid effusion between the arachnoid and pia mater, and the ventricles are occasionally filled with serosity. On opening the abdomen, the peritoneal coat of the stomach and bowels generally looks healthy, except in the congestive cases, when the minutest blood-vessels will be seen distended with dark-coloured blood. In different parts of the mucous membrane, we frequently see considerable vascularity, sometimes ulceration. The liver is often gorged, or soft in texture.

"From a cautious survey of the symptoms during life," says Dr Armstrong, page 16. "and from the examination of several bodies after death, I am warranted in affirming, that the brain, the liver, the stomach, the intestines, and the lungs, are the parts most often inflamed, and that the inflammation in these parts is generally the cause of death, together with the affection of the throat."

Treatment.

In scarlatina, as in other diseases, a difference in pathological opinions has of course given rise to a corresponding difference in the treatment. Some, considering it a disease of debility, recommend bark and wine, with nourishment; even stronger stimulants than wine, and condemn antiphlogistic means; in this class of symptomatical pathologists stand Underwood and Dr James Hamilton Jun. It will not surprise my readers, that the first named individual, who did not live long enough to profit by modern pathology, should have taught the doctrines that prevailed in his own time; but considering the account which every author gives of the symptoms and course of this disease, and the appearances on dissection, it is lamentable to reflect that there is one author of the present day, who speaks doubtfully even of local bleeding, and who recommends cordials and nourishment, and even wine itself, in large quantity; but all this does Dr James Hamilton Jun.*, and he goes even the length of quoting a great medical authority, *the head master of a boy's school in Yorkshire,* in whose practice, among the said boys, "it was found that children under 15 years of age, affected with this disease, required within the twenty-four hours, sometimes not only a bottle of port wine, and another of raisin, but also a proportion of brandy †." And in the same page it will be found, that Dr Hamilton treats croup by the same means. "In some cases where croup had supervened to this disease, a combination of wine, cordials, opiates, and blisters, with large doses of purgatives, repeated every hour, till relief was procured, seemed to save life."

Underwood, in describing the treatment necessary in this disease, makes the following statement: "Should the affection of the throat, therefore, be evidently inflammatory, or should a case occur where the fever may seem to be of that kind, (which may be better ascertained by the hardness of the

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* Vide his work on the Diseases of Children, p. 380.

† Management of Children, p. 381, Ed. 1824.

pulse than any other symptom,) it will very rarely bear bleeding, even in the beginning of the disease; as symptoms of debility generally attend in some period of the scarlet fever, and will allow only of that middle course of treatment hinted at above. In a general way a cordial plan is required throughout the disease *." And yet, on turning to the next page, it will be found he recommends bleeding in the secondary fever; and he also tells us, that a critical bleeding from the nose has saved life, when the patient's state " has appeared very hazardous, and the prostration of strength been considerable."

In the slighter forms of scarlatina, very little treatment is necessary, further than confinement; attention to the bowels to keep them free, and the antiphlogistic regimen. In such cases, however, the medical attendant should be careful to watch diseased action, at the period when the eruption naturally declines, for reasons already mentioned. I used formerly to see fatal cases of scarlatina, when I practised according to the opinion of the schools, carefully avoiding blood-letting, and using all the means recommended to support the strength; and it occasionally occurred to me to see patients snatched from the grave by considerable bleedings from the nose, at times when it was thought the loss of an ounce of blood would kill them. This circumstance, together with the appearances found on dissection, led me to bleed in many subsequent cases, and I never had occasion to regret it. Blood has been drawn at all periods of the disease, in cases which required it, from the state of the lungs, and also of the brain; and if the operation is performed during the period of the eruption, it will disappear, if a sufficient quantity be taken. When the inflammation of the throat runs very high, I know no remedy producing such certain and immediate good effects as general bleedings.

Dr T. P. Lucas of the Royal Artillery, and Dr Wilson, cannot have forgotten the case of Ann M'Farlane, aged 18, which they treated, when they were my pupils in the year 1824; from whom they took above ℥xx of blood, with instant good effect, on the fourth day of the disease, when she had a large

* A Treatise on the Diseases of Children, p. 289.

sloughing ulcer occupying the whole of the right tonsil. She afterwards required no other remedies but laxatives, and in a fortnight returned to her usual occupation.

A great many other gentlemen can be appealed to, who have been pupils at my dispensary; and I may refer in an especial manner to the testimony of my friend and talented colleague Dr Robertson, who was opposed to the practice of general bleeding, till he saw the success of it. When general bleeding is either inadmissible, or not thought necessary, or when the child is under two or three years of age, local bleedings by leeches will be found highly serviceable; and when the throat is extensively inflamed, although the accompanying symptoms may be mild, I always think it right to reduce the inflammation in that way, followed or not by a blister, according to circumstances. Laxative medicines, frequently repeated, are very necessary. Sponging the body either with tepid or cold water, produces good effects, by allaying restlessness. Cold affusion may do no harm in the slighter forms of scarlet fever, but in the severe cases which invariably display marks of internal disease, and in which congestion has taken place, its use cannot be defended upon sound principles. In treating of the means of cure in this disease, Dr George Gregory highly extols this remedy, even in the severe form of Scarlatina Anginosa, at page 131. of his work on the Practice of Physic. "At one time, (says he,) it was supposed that blood-letting was necessary, but experience has proved, that in the cold affusion we possess a means of controlling this state of disease, safer and equally effectual." "There is *no tendency to affection of the chest, as in Measles*, which the application of cold to the surface might aggravate *." How does this assertion agree with a preceding statement at page 130; "*but the whole history of scarlatina proves, that it is more a disease of mucous membrane than of the skin.*"

The tartrate of antimony has been long employed in this country in the treatment of fevers and inflammations, and it is very serviceable in this disease in controlling the action of

* Has Dr George Gregory ever applied his ear to the chest in such cases?

the heart, and relieving uneasiness, and may be used in the diseases of children, by dissolving one or two grains in two ounces of water, a tea spoonful for a dose as often as may be thought necessary.

Gargles may certainly be employed, and those of a stimulating nature are much lauded; but it appears to me that the best gargle is a little warm water; and I particularly caution young practitioners against attempting to syringe the throat of a child, in the manner recommended by some. Inhalation of the vapour of warm water will be found to ease the throat more than any gargle. Opiates are often serviceable in the last stage, and during convalescence, to allay irritability, and procure sleep.

Since the alteration which I have adopted in my practice, I rarely see secondary fever or dropsy; and too great care cannot be taken during recovery, to caution the patient against the risk that he will run from exposure, errors of diet, and neglecting the state of the bowels. Should dropsy take place, it will in general be found to be of the acute kind, and will sometimes require the lancet, although commonly brisk purgatives, with diuretics, will suffice.

It may be here mentioned, that various affections occasionally follow scarlatina, as inflammation, and swelling of the glands, and perhaps more particularly of the parotid, which must be treated upon ordinary principles. Inflammation often attacks the internal ear, leaving a fetid discharge, followed on some occasions by incurable deafness, which must be also treated in the usual manner.

MEASLES.

This may also be defined to be a disease attended by fever and an eruption, which appears at various periods; but generally at the termination of the fourth, or beginning of the fifth day, and continues for four or five days; after which, some discolouration is left on the surface of the body, and occasionally the cuticle separates, but not so invariably as in scarlatina.

Measles has been divided into four varieties:

1*st*, Rubeola vulgaris.
2*d*, ——— sine catarrho.
3*d*, ——— nigra.
4*th*, ——— putrida.

Pursuing the same pathological plan which has been adopted when treating of scarlatina, I shall also mention two great varieties of measles, the congestive and the inflammatory.

In the first species, which has been so beautifully illustrated by Dr Armstrong, re-action does not take place; or if it does, it is slight, the eruption is trivial; the pulse is feeble and oppressed, and perhaps quick; and the surface is free from that redness and heat which gives such a striking external character to the pure inflammatory disease. This is, no doubt, one form of the complaint called putrid, and which has been described by Morton, Huxham, and Watson. The same pathology that was maintained in scarlatina, and also in the general pathological statement concerning eruptive fevers, equally applies in this case; and therefore it is unnecessary to repeat the same observations.

Capuron, in his treatise on the diseases of children, at page 293, makes the following statement, which is valuable, because it was written without any view to the doctrines which are maintained in this work:—"One of the most dreadful complications of measles, is that with an ataxic or malignant fever. Individuals naturally lively and delicate, as those in infancy, are more subject to it. It is one of those unlooked for anomalies in the vital properties. The functions of the brain are disturbed; respiration is deranged, and becomes extremely constrained; in a word, the patient is *quickly* reduced to the last extremity, if something is not done for his relief. The most active treatment is here indispensably necessary to sustain life, which is shaken to its very foundation." Subsequently he states, that "infants naturally weak, or who live under the influence of debilitating causes, are exposed to an adynamic or putrid fever during the course of the measles. One detects this dangerous complication by the change in the form and colour of the spots,—from being at first prominent, and of a lively red, they become more depressed, pale, and livid; in which case, we must prevent the prostration of strength in

good time, *and direct the eruption back again towards the surface of the body* by the use of tonics, such as wine, bark, and camphor; the greatest advantage may be also obtained by epispastics, and above all, by blisters." At page 294, he again observes, "there are infants in whom the march of the eruption is arrested, the spots disappear, and pains in the chest, more or less severe, manifest themselves; respiration is oppressed; peripneumony declares itself; suffocation is threatened."

Mr Burns of Glasgow, in detailing the symptoms of measles, states, that "sometimes the eruption suddenly and prematurely recedes, or never comes fully out. Both of these cases are unfavourable, the fever is high, and the oppression great." It will be seen, by consulting the report of diseases treated at the New Town Dispensary of Edinburgh, during the last six months of the year 1816, which is published in the 13th vol. of the Edinburgh Medical and Surgical Journal, that this form of the disease was very prevalent, and that few children recovered; most of those attacked were of feeble habit, or weakened by previous illness, "but others appeared to have been quite healthy when exposed to the contagion." "Those affected in this way were chiefly infants, but a few were children from four to seven years of age. They were ill longer than usual, generally five or six days, before any eruption appeared, having the usual catarrhal symptoms, with much debility and drowsiness; frequent vomiting; generally frequent, and sometimes bloody stools; quick pulse, and white tongue, *without much heat of skin*. When the rash appeared, it was at first less distinctly circumscribed, and afterwards less elevated than usual, of a darker colour, and attended with less heat of skin. After its recession, the patients were more or less distressed with cough and dyspnœa, generally with diarrhœa, and almost always with a frequent ineffectual attempt to vomit. The pulse and breathing became very quick; the tongue, after losing the white crust which had covered it at the beginning of the disease, became dry and hard; the posture indicated much debility; the countenance had the languid, vacant expression of typhus; and a dark-coloured fur usually gathered on the lips and teeth. In all these cases, there was

a degree of drowsiness approaching to coma; and in a few, this state appeared to be blended with delirium.

" In two or three instances, infants exposed to the contagion of measles, became affected with catarrhal symptoms, fever, drowsiness, quick and oppressed breathing, and died, without any eruption being observed."

" In the cases of speedy recession of the rash, if the cough and dyspnœa were urgent after its disappearance, *death almost universally ensued*, from the first to the fourteenth day after that change. But those in whom the pectoral symptoms were less distressing, recovered from the state above described, under the use of wine and cordials, which, as far as we could judge, were as decidedly beneficial in these as in any other cases in which we have seen them used. It should be mentioned, however, that one or two, who could not be prevailed on to take either food or medicines, gradually mended without any crisis being observed.

" On opening the bodies of those who had died of this form of measles, a considerable accumulation of mucus in the bronchia was always found. In two infants, under a twelve-month, there were marks of inflammation of the lungs themselves, (which in one of these had proceeded to ulceration,) and a good deal of water in the pericardium; and in one child, four years of age, there was such a congestion of blood in the lungs, that a large portion of them sunk in water *."

In several cases, in which the eruption had almost, or entirely disappeared on the second day, it re-appeared that night, after the use of the warm bath, and an opiate, and continued nearly the usual time.

An aphthous state of the mouth and tongue occurred pretty frequently, but was not confined to the unfavourable cases.

The circumstances of the livid colour, and rapid recession of the eruption, of the succeeding typhoid state, and the irritability of stomach attending that state, seem to point out a resemblance between the cases of measles now described, and the worst cases of scarlatina.

It has fallen to my lot to treat a considerable number of

* Do such appearances support the practice which we are told was had recourse to in these cases, wine and cordials?

cases of this kind; and the best plan, which experience has led me to adopt, is, first to try the warm bath and stimulating frictions; but if the symptoms are very threatening, such as coma, convulsions, or asphyxia, or an approach to these states, the best practice, if the patient is an adult, or even a child, if a vein can be found, is to bleed at once. Several interesting cases might be detailed, shewing the advantage of this plan; I shall now merely give a short sketch of one. A few years ago, I was suddenly called to see a child in measles, the first day of the eruption; and every appearance had been so favourable up to the moment of the sudden recession of the rash, that the family had not applied for medical advice. When I saw it, the eruption, which had been extensive, and of the usual colour, was not now to be seen, but still it was to be felt. The child was under three years of age, and of a good constitution; it had had three or four strong convulsions in the course of rather less than an hour; it was now insensible, and to all appearance comatose; one pupil dilated, while the other was of the natural size; and its hands were clenched. A good sized vein was found in the arm, which was instantly opened, and from eight to ten ounces of blood were abstracted, when its breathing, and every other appearance, became more favourable; the pulse, which was under sixty, rose gradually as the bleeding went on, and the child soon became quite sensible. So far from debility following, I was obliged to apply leeches next day to the head, and the child made a rapid recovery, and was running about in the course of a week.

In every respect, the treatment must be conducted in the manner so fully detailed in congestive fever, as well as in the congestive form of scarlatina.

The inflammatory disease is the form which is most generally met with; we have the usual eruptive fever, preceded by rigors, depression, and debility; along with the fever, the patient has a dry cough, with hoarseness; frequent fits of sneezing and coryza. He also complains of giddiness and pain in his forehead as well as in the back; his pulse is in various states, sometimes frequent and small, or frequent and strong, often it is irregular and oppressed; the bowels are generally confined, and the evacuations fetid. In the course of the second, third, or fourth day of the fever, the symptoms run higher;

the eyes are tender, red, watery, and inflamed, and the expression of countenance is peculiar; the dyspnœa, which was slight at first, is now more marked; the patient complains of tightness of the chest, sometimes pain and oppression at the præcordia. With respect to the cough, it may be remarked from the very commencement of the disease, and often before seizure. The eruption first appears on the face and neck, and in twenty-four hours, it is found on the breast, and afterwards gradually spreads over the rest of the body; small red papulæ, slightly elevated, resembling recent flea-bites, are perceived; these soon form themselves into extensive patches, irregular in shape, but their margins appear somewhat crescentic. The eruption is sometimes very extensive, at others slight. The throat, when examined, will be observed to be covered with small red patches, occasioning difficult deglutition.

Sometimes immediately before the eruption comes out, the patient is seized with violent sickness and vomiting; sometimes with convulsions; but if the eruption subsequently comes out freely, these symptoms generally abate.

In a great majority of cases, the disease is rather slight, and the internal disturbance, which is discovered by the symptoms already described, is generally very much appeased soon after the appearance of the eruption, particularly if it comes out freely and plentifully. Occasionally, however, the symptoms are very severe from the beginning; the cough is frequent and harsh; there is considerable dyspnœa, with hot skin, thirst, and a quick pulse; and the child is occasionally so comatose, that this symptom early attracts our attention.

As the embarrassment of the lungs increases, which may happen in any stage, the face becomes discoloured, and sometimes presents a purple appearance, and occasionally the eruption over the whole body assumes a dark colour; this is the state which is called *rubeola nigra*, and also probably that which has been described by Dr Watson and others, under the term Putrid Measles.

After the natural disappearance of the eruption, the fever, dyspnœa, and cough, in some cases increase, attended or not with marked gastro-intestinal irritation and diarrhœa; and occasionally inflammation of the eyes, and glands of the neck,

succeeds; blistered surfaces frequently also slough; and it has been remarked by Dr Watson, Dr Ferriar of Manchester, and others, that an ulceration of a particular character attacks the pudendum of girls, from which few recover; three cases have fallen within my observation, two of which proved fatal; and it is my opinion that death is not owing to this ulceration, but to internal disease. Dissection, in one of these cases, displayed extensive disease of the lungs, but more particularly extensive ulceration of the mucous membrane of the intestines, of which the preparations and drawings are in my museum *.

Appearances on Dissection.

Morgagni notices a case, which he says has been transferred from Ballonius into the Sepulchretum, which is as follows: "On examining the body of a person to whom it was suspected that poison had been given, the stomach was found beset with exanthemata, and the physicians were upon the point of asserting that the appearance was owing to poison, when they were informed that the person died of measles, which began to appear on the skin, and suddenly vanished."

In the examinations that I have conducted, effusions and other marks of inflammatory action have been found in the brain, and sometimes ulceration in the mucous membrane of the bowels; but I have seen no dissection in which the pulmonary system has escaped. The lining membrane of the bronchia, trachea, and larynx, has not only been found in a highly vascular state, but it has been thickened, softened, and occasionally ulcerated; the ulcers are small, and generally situated near the bifurcation. The bronchial tubes are more or less filled with a matter like pus or thick mucus; the colour of this secretion varies; it is sometimes tenacious, at others not so. This condition of the air passages has always existed on both sides of the chest. In many cases, the lungs are

* This is the disease which has been described in the 7th vol. of the Med. Chir. Trans. of London, by Dr Kinder Wood, who saw twelve cases, of which only two recovered. The case of recovery which I have noticed, was under the care of Dr Moffit of the 7th Hussars; the patient was a soldier's child. The disease followed a very slight attack of measles.

found inflamed in different degrees; the inflammation rarely affecting both lungs, frequently confined to one lobe. Occasionally there are extensive inflammations of the pleura, indicated by effusion of serum and exudation of coagulable lymph, besides thickening of the pleura and recent adhesions; and in cases of longer standing, tubercular formations are observed in different degrees of advancement; sometimes even excavations of the lungs.

It ought to be noticed, that the inflammatory appearances in the brain and bowels, together with the disease of the substance of the lungs, and the pleuritic effusion, are to be regarded as accidental circumstances; whereas the inflammation of the bronchial membrane is an essential part of the disease, and may be traced, together with the other lesions mentioned, from the beginning of the complaint *.

Treatment.

In the slighter forms of this disease, as in Scarlatina, very little treatment is necessary, further than confinement to one room; the free exhibition of gentle laxatives, and low diet. The medical attendant should be still more watchful in this disease than in Scarlet Fever, at the period when the eruption naturally recedes, for reasons already mentioned. In the severer forms of Measles, bleeding is necessary very often during the eruptive fever, when the pectoral symptoms run high, and look threatening; and also when coma and convulsions take place, both of which are more likely to happen, but particularly the latter, if the child is suffering from difficult dentition. I was once called to see a very fine boy of two years of age, who, during the eruptive fever, was seized with convulsions in the night, at the period when the eruption ought to have appeared, and from whom nine ounces of blood were taken. Next day he had nine or ten leeches applied to his head: the symptoms were afterwards exceedingly slight, and he made a rapid

* As such a wide difference of opinion prevails respecting the pathology and treatment of Measles, I am in the habit, in my lectures, of reading the accounts which have been given of the appearances found on dissection, by different individuals, in various places; and it may be here stated, that these accounts corroborate the sketch given above.

recovery. He bore the bleeding without any tendency to syncope, while his brother, a boy of twelve years old, labouring also under the same disease, and who required blood-letting for pectoral symptoms, fainted upon the loss of two ounces of blood.

When bleeding is necessary, it ought to be performed in the manner already described when treating of inflammatory fever; a sufficient quantity should be taken as early as possible in the disease, and the operation ought to be repeated at short intervals; but when the bronchitic symptoms have been allowed to go on neglected till the air passages are gorged with mucus, bleeding is a very questionable remedy, and no doubt often does irreparable mischief, for reasons which will be fully noticed when treating of bronchitis. Leeches are to be employed as directed in Scarlatina, and also blisters *. Antimony is also serviceable; and opiates in the last stage, when the air passages are not filled with mucus. The warm bath affords much comfort to the patient in all the exanthemata, every night, or every other night after the eruption has declined, and when the cuticle is exfoliating. During recovery, great attention should be paid to the diet, clothing, and state of the bowels, so as to avoid the disagreeable circumstances which so often follow the exanthemata, viz. the formation of tubercles in the lungs; inflammation and ulceration of the mucous membrane of the bowels, producing the disease which is called Tabes Mesenterica, and also glandular affections of the neck, inflammation of the eyes, and chronic eruptions of the skin.

This is a very different line of treatment from that which is still recommended by Dr James Hamilton jun. the Professor of Midwifery, and which is founded upon the most curious notion that can well be conceived, viz. that the bad symptoms in Measles are not occasioned by inflammation, but by "*torpor of the lymphatics.*" But as this statement may not be credited, Dr James Hamilton jun. the Professor of Midwifery, shall be allowed to speak for himself. At page 377. of the work already quoted, last edition, the following passage will be found: "As

* When a blister is applied to a child, under any circumstances, the part should be carefully examined daily by the medical attendant.

the debility which always attends and follows Measles is the most prominent feature in the progress of the disease, it is not easy to understand the reasons why practitioners have been led to overlook so obvious a circumstance. The objections to wine and nourishing diet, which it is so often necessary to combat, probably arise from the supposition, that the frequency of the pulse and the cough are the effects of inflammation, when in fact they are occasioned by *the torpor of the lymphatics*" ! ! !

SMALL-POX.

This disease also commences with rigors, followed by febrile symptoms, which continue from forty-eight to sixty hours, and even longer, before the eruption appears; and it is no uncommon thing for children to be seized with convulsions during this period. The attack is frequently very sudden; vomiting generally occurs; there is pain in the head and back; but the patient complains very much of oppression at the præcordia, and a pungent pain in the pit of the stomach, much increased on pressure; there are also decided marks of general disease of the mucous membranes, and more particularly that of the bronchi.

Physicians have divided this disease into two kinds, from the form which the eruption assumes. When the pustules do not run into each other, the disease is termed Distinct; when they are very numerous, and run into each other, the disease is termed Confluent, all the symptoms being more severe, and attended with more danger than in the Distinct.

The eruption first appears on the face, in the form of small red papulæ. About the third day, a vesicular appearance is observed on the top of each spot, which is depressed in the centre, and is found to contain a transparent fluid, and an inflamed margin forms a circle round it. About the sixth day the eruption loses the depression in the centre, and instead of serum, will now be found filled with a thick pus. When the pustules are numerous, the parts swell much, and the neighbouring skin is of a red colour, from the extension of the in-

flammation. About the seventh day the pustules on the face burst, and upon the eighth or ninth they begin to dry and scab over the rest of the body. The swelling, which affects the face, hands, and feet, more severely than other parts of the body, gradually declines; the skin remains of a dark brown colour after the scabs fall off, and it is some weeks before it recovers its natural appearance.

This is the course which the Distinct Small-pox generally runs, and when treated properly it is rarely fatal, every thing depending upon the state of the lungs and brain.

In the Confluent Small-pox, all the precursory symptoms are more severe. The eruptive fever runs higher; the pain in the epigastrium and dyspnœa are more complained of; convulsions and delirium also more frequently take place; and the patient runs more risk of secondary fever, and danger from extensive inflammation, ulceration, and sloughing of the skin.

In both varieties, but particularly in the Confluent, copious salivation frequently takes place, and soreness of the throat is a marked symptom; upon examining the mouth and fauces, vesicles or pustules may be observed as far down the pharynx as the eye can reach. I have seen the same appearance on the mucous membrane of the rectum, in a case of Small-pox in which there was prolapsus ani; and in the year 1823, a great number of my pupils had an opportunity of seeing a similar case. In some severe cases, petechiæ make their appearance when the eruption has begun to decline; as well as bloody vomiting; diarrhœa with tenesmus; and the dyspnœa frequently increases as the disease advances.

The inflammation in the skin is so deep and severe, that the death of a portion takes place, perhaps of the cellular substance, as in carbuncle, and this is one cause of what are called pock-marks.

In Small-pox, as well as in other acute diseases, there is a congestive form, in which the system is unable to raise sufficient re-action; there is consequently more oppression; the surface is pale; the eruption is flat, and never matures properly; the dyspnœa is very considerable; and I verily believe this is the form which is called the most malignant.

In severe cases, death takes place before the eighth day, but, generally speaking, the fatal event happens some time between the tenth and seventeenth days. The proportion of deaths is said by Dr George Gregory, who must be a very good authority upon this subject, to be about one in every six persons who receive the Small-pox in the natural way.

Appearances on Dissection.

Head.—I have seen marks of inflammation of the membranes, evinced by a considerable arborescent vascularity on the surface of the brain, the vessels of the pia mater being greatly loaded with blood; together with effusion under the arachnoid, and into the ventricles. But it becomes me to speak with diffidence with respect to this part of the subject. Dr George Gregory says at page 105, that he has "never been able to trace any morbid appearance in the head," which is rather at variance with the results of my limited experience, and with a statement which he subsequently makes at page 108. In directing the mode of treatment, he says, "It is to be remembered also, that in Small-pox, fully as much as in any other form of fever, there is a tendency to congestions and inflammations in the head and thorax."

Although I have been prevented, by the impatience of surviving friends, from opening the head as often as I could have wished, yet many opportunities have been afforded to me of examining the contents of the thorax and abdomen. I have seen pustules in the pharynx, larynx, trachea, and œsophagus, in those who died by the twelfth or thirteenth day, on some occasions closing up the larynx. The mucous membrane of the bronchi very vascular, and the air tubes completely gorged with matter, most frequently of a reddish colour; but in no instance have I been able to discover pustules below the bifurcation. The substance of the lungs congested with blood, and in the first and second stages of inflammation; and in one instance there was pleuritic effusion. On examining the body of a deformed girl, who died under an attack of Confluent Small-pox, the peritoneum and pleura were both studded over with small circular spots, which looked like a faded

eruption, but perhaps they might have been produced in the manner which we sometimes see in cases of purpura. I have observed nothing in the stomach to account for the severe burning pain complained of in the epigastric region; the mucous membrane has certainly shewn vascularity, and has been covered with a viscid exudation, and the follicles very much increased in size, which appearance often extends throughout the whole intestinal tube; and in three instances, I have seen pustules, or vesicles having a pustular appearance, with a depression in the centre, in the jejunum, ileum, and also in the large intestines, of which the preparations and drawings are in my museum; and some of them were surrounded by an inflammatory areola. These were seen by very many individuals, and not only seen, but examined minutely, and dissected with a view to settle this disputed point. Perhaps those who state, "that no vestige of pustules have been traced in the cavity of the abdomen," have taken the matter for granted, upon the authority of others, from the dread of soiling their own fingers.

Treatment.

Small-pox under every form is a serious disease, for however mild it may appear in its attack, its consequences are always to be dreaded. The confluent, however, is a more dangerous disease; and we are to be guided in the treatment by observing the state of the brain, and the organs contained within the thorax, as well as the condition of the surface of the body.

It was formerly the custom to keep patients very hot, and to employ stimulants; and the consequence was, that the mortality was immense; but now, and for many years past, patients have been kept cool, and the antiphlogistic regimen is recommended, but too often, I fear, avoided from the dread of putridity. Bleeding has been often employed, and strongly recommended in this disease, particularly during the eruptive fever; but it has as often been condemned, because it destroyed that strength which is so much required in the latter stages of the disease. But this is the same language which is used in the purest inflammatory fevers. In all the

successful cases of confluent small-pox occurring in adults, which I have treated, except one, amounting in all to about eighteen, bleeding was employed, and largely employed, in the eruptive fever, to moderate what was thought to be local inflammation, without suspecting that they were cases of small-pox; several of the sufferers were my pupils, who had had themselves bled before I was called in. In a number of instances, blood has been drawn even after the appearance of the eruption, and with decided benefit; but upon the whole, I am then disposed to trust more to leeches for relieving local inflammations. The state of the throat and air passages requires daily and minute examination, and after the eruption comes out, leeches are often necessary to be applied to the neck, and also to the chest, to reduce inflammation. Bleeding before the appearance of the eruption must certainly moderate that symptom, which is of the greatest consequence, as many die in small-pox from the severity and extent of the external inflammation. The appearance of petechiæ does not prevent me from ordering the application of leeches, in cases which require this practice. With respect to other points of practice, they are the same as those which have been recommended in scarlet fever and measles. I may be allowed, however, on this occasion, to insist on the propriety of trusting to nature a little more than is generally done, when the patient begins to convalesce, avoiding attempts to hurry it on, and to restore the strength, which is the cause of secondary fever, in a great proportion of cases. A number of disagreeable circumstances often take place after small-pox, and the most painful one is the formation of boils on various parts of the body, and sometimes even carbuncles, of which there are successive crops tormenting the patient for weeks. Glandular affections also frequently follow, as well as ophthalmia tarsi, and ophthalmia purulenta. I can state from experience, that it is a good plan to open the pustules on the face early, in order to prevent marks.

MODIFIED SMALL-POX.

THERE are several circumstances, which are said in medical language to modify this horrible disease. The mysterious power of vaccination in preventing small-pox is now admit-

ted, but experience has taught us, that this antidote does not always succeed; but the generality of cases which follow vaccination are very mild. Individuals are also sometimes attacked a second time with small-pox, and in my comparatively limited experience, I have known upwards of twelve well-authenticated instances. The first attack is generally supposed to modify the second, and to render it milder; but it is curious, that all my cases of secondary small-pox, with the exception of two, have been remarkably severe; whereas I have not seen a severe case of small-pox after vaccination.

Previous to the great discovery of Dr Jenner, respecting the power of vaccination in preventing small-pox, the disease was modified, and rendered less severe and fatal, by inoculation. This practice was long followed in the East, and was introduced into this country from Turkey, by Lady Mary Montague.

An interesting question arises, to determine why the inoculated small-pox should be so much milder than the natural?

This is easily answerd. A proper season of the year is chosen for the operation; the patient undergoes a certain preparation, and his bowels are particularly attended to.

In the modified disease, the stages are all shorter, and the eruptive fever is slighter; the convalescence is less tedious, and the sequelæ are not so troublesome.

This disease must be treated according to the general principles hitherto laid down.

CHICKEN POX.

This disease, known also by the name of Varicella, has been often confounded with small-pox. Those who maintain the identity of the two diseases, and who have figured in the controversy that has been so long carried on, have nevertheless completely failed in proving their position with respect to one point, while they have succeeded in another, apparently without being aware of it. Looking at the diseases symptomatically, there is no doubt a striking difference. The symptoms are all much slighter in chicken pox; the eruption is vesicular, and there are repeated crops; and further, this

disease is rarely attended with danger; but a pathological eye cannot fail to discover a marked resemblance. But the only two questions to determine are the following: Does an attack of the one disease prevent the other? Will matter taken from small-pox produce varicella, or from varicella small-pox? Extensive experience enables us to answer both in the negative, and therefore they cannot be identified any more than measles and small-pox.

With respect to the treatment of varicella, it is only necessary to mention, that it must be conducted in the same manner with other slight eruptive fevers; and it should be remembered, that some local inflammation may arise even in the very slightest of them. I have known two fatal cases of varicella, one from inflammation of the substance of the lungs in an adult, the other from inflammation of the membranes of the brain in a child of eighteen months old *.

MILIARY FEVER.

This disease is characterised by an irregular eruption, of exceedingly small round vesicles of the size of millet seeds, and which feels, when the hand is passed over it, as if there were small grains of sand beneath the cuticle. Each vesicle is surrounded by a slight inflammatory blush.

This disease is said to be idiopathic, as well as symptomatic. There can be no doubt whatever, that an eruption of this character often appears in the course of all fevers and inflammations; and in such cases, attention ought to be directed to the original disease.

It is also considered one of the diseases of child-bed, and it is principally introduced in this work on that account. Since women in child-bed have been treated in a proper manner, by avoiding hot stimulating drinks, and by admitting cool air, it is not very frequently met with. It is described by authors to

* It has been thought proper to pass over vaccination, as it forms a part of surgery, rather than of physic; and it has been determined not to dwell upon surgical subjects in this work.

commence with rigors, sickness, and languor, which threatens syncope, quick pulse, heat of skin, and thirst. The eruption does not usually appear till four, five, or six days after the commencement of the febrile attack. Previous to its appearance, there is a sense of pricking, tingling or itching of the skin, sometimes attended with a benumbed state of the extremities. The patient is greatly oppressed, and complains of a sense of weight about the chest; her spirits are low, and a profuse perspiration takes place, which is frequently remarked to have a sour smell. The vesicles form into scales, and fall off in a few days.

The eruption is generally distinct, sometimes confluent; it is said rarely to affect the face, and different crops may appear in the same fever; it attacks those most frequently, who have been previously weakened by disease, fatigue, or long continued sweating, or who have had a hot regimen. The miliary vesicles often occur during the course of many of the puerperal diseases, such as milk fever, inflammation of the brain and peritoneum.

Mr Burns, in his Principles of Midwifery, p. 420, says, "Whether the miliary fever be idiopathic or symptomatic, the treatment is the same." If he means to state, that slight miliary eruption is to be treated in the same manner as miliary eruption, "depending (to use his own expressions,) on fevers connected with a morbid state of the peritoneum or brain, which generally prove fatal," he is most decidedly wrong, as the eruption is only to be regarded as an accidental symptom of another disease.

Treatment.

If this disease occurs in the course of inflammation of the peritoneum, brain, &c. the particular disease ought to be treated in the proper manner, without reference to the eruption. If not, the bowels are to be regularly attended to, sweating is to be avoided, as well as every thing which heats the patient; and indigestible food must be prohibited. Whenever the patient is found perspiring, the linen should be changed in a careful manner, and the body properly dried and rubbed with a soft towel; in this case sulphuric acid will be found

very useful, and there can be no objections to the moderate use of bitters.

ROSEOLA

Is a fever attended by a rose-coloured efflorescence, without wheals or papulæ, and apparently not contagious. It has often been confounded with measles and scarlet fever, and I have seen the wisest heads baffled in determining the point; in one case in which such a division of opinion took place between two physicians, a third declared that the patient laboured under small-pox, and the result of the case proved that his opinion was the correct one.

This is a disease which may very frequently be traced to indigestible matter, and particularly fruit in the stomach and bowels; therefore the treatment is very simple, so simple, that even in the higher ranks, medical men are seldom consulted; and they would be still less frequently called, only that parents are afraid from the resemblance, that it is scarlet fever. Confinement, attention to the bowels, and avoiding solid animal food, are the best means which can be adopted.

Willan and Bateman have seven varieties of this disease, but no practical benefit can be derived from such minute hair-breadth distinctions as these and other skin nosologists have drawn *.

URTICARIA.

This disease is known to the vulgar by the name of nettle rash, and is distinguished from other febrile eruptions, by circular elevations of the cuticle, of a red colour, with a white spot in the centre, and is usually termed a wheal; and here again Willan and Bateman have unnecessarily described six varieties.

The eruption is generally preceded by marks, the most dis-

* It affords me great pleasure to refer to Mr Plumbe's Practical Treatise on Diseases of the Skin. That gentleman has taken up proper views of the subject, and treats of all the affections pathologically, therefore he has few sub-divisions. It is the best work we possess.

tinct, of gastro-intestinal irritation; and the patient is affected with restlessness, oppression, languor, and want of appetite; his tongue, however foul, will in general be found red at the tip, and round the edges. If the eruption is very general, the patient suffers much distress from the heat and itching of the parts, but the internal disorder will be found to be relieved. Sometimes the rash only appears when the individual is heated by exercise, or by wine, or when he is undressing himself; and it is also frequently excited in a fresh part, by friction or scratching.

This is an affection which is often produced by eating particular articles of food *.

It has occurred to me to observe, that individuals who are frequently teazed with this affection, and others of the same nature, during youth, are those who are subsequently affected with gout.

It is sometimes difficult to distinguish urticaria from another very painful and troublesome affection, which is known by the name of *erythema fugax;* but this is a matter of no practical importance, as both eruptions are produced by the same causes, and cured by the same remedies.

Urticaria may continue for an indefinite period, and may be reproduced in particular constitutions every time the stomach is offended.

Treatment.

Nothing is more simple than the management of a case of urticaria; but much more depends upon the patient himself, than upon the remedies which a physician may prescribe. He must find out, by experience, the articles of food which disagree with him, and he must have sufficient resolution to avoid them for a time. It should be impressed upon young practitioners, that danger sometimes proceeds from the repulsion of the eruption by cosmetics.

A very beautiful young lady was frequently troubled with febrile symptoms and this rash. She was attended by an eminent physician, who gave her a large bottle of a strong

* Vide Plumbe's Work.

solution of sugar of lead, with directions to sponge her body with it when her skin was very itchy. Upon the first occasion, she stripped herself, and applied it as extensively as she could, and it surprised her that the itching suddenly ceased; upon examination, the eruption, which was very vivid before, had almost entirely disappeared. She instantly felt sick and oppressed, and fainted. She continued for a considerable time in a state of insensibility, and her attendants were doubtful whether life was not already extinct. To shorten a long story, it may be stated that she survived, but has not since known what it is to enjoy a day's health. She appears to labour under disease of the uterus as well as the liver.

Besides avoiding every thing that disagrees with a patient, it may be mentioned that gentle laxatives are essential remedies; and that an emetic is highly useful, if any offending matter is still in the stomach.

THE PLAGUE.

The disease which is now to be shortly described, appears to be an endemic fever, attended sometimes during its course by buboes, carbuncles, or some eruption on the surface of the body, which is, under certain circumstances and seasons, highly contagious; and it would seem also to be occasionally epidemic.

The accounts and descriptions respecting the phenomena of this disease are so contradictory, and the history of morbid appearances are so few and meagre, that I have not sufficient data before me wherewith to form pathological opinions.

The plague, it would appear, is sometimes very mild, at others very severe; and if it be a fever, the symptoms must not only vary in intensity, but they must also have a very wide range of character. It must have varieties and shades arising out of one organ being more severely affected than another, as well as from local congestions and inflammations. The plague appears also to be modified by season, situation, and habits of individuals. It is not to be wondered at, therefore, that different writers should have given different histories of the symptoms and progress of the disease; but as yet, we

have no pathological description that can be depended on; therefore my observations must be brief.

It seems to be the general opinion, that the plague is nothing more than a malignant typhus, and the only peculiar symptom that has been described is the bubo, carbuncle, or the appearance of some eruption on the surface of the body; and all writers agree in opinion, that the safety of the patient very much depends upon the suppuration going on speedily and kindly. The plague, therefore, seems to be closely allied to the exanthemata, and more particularly to small-pox.

The disease appears to be first announced by rigors and oppression, followed by heat of skin, great prostration of strength, giddiness, and headache; the expression of the countenance is besotted, and the eyes have a muddy, glistening appearance. It is stated, however, that in some cases there is a ferocious aspect; in others, the patient's look is subdued. The pulse varies much; it is sometimes hard and quick, at others, small and quick; sometimes described as being full, at others, soft. The intellect is sometimes clouded; at others, there is insensibility and fierce delirium; occasionally stupor takes place, and in some cases the functions of the brain remain distinct and clear. The patient, in general, seems indifferent respecting his fate; the tongue is at first moist, although it may be more or less loaded; there is sometimes constipation, at others diarrhœa, the stools are always highly offensive; the stomach is in general very irritable, every thing taken being almost instantly rejected.

In a few days from the first attack, generally the third, pains, often acute, are complained of in the groins and armpits; and unless the swelling and suppuration of the glands go on quickly, death speedily takes place. Sometimes carbuncles appear with or without the buboes; but petechiæ more frequently than carbuncles. Discharges of blood from the stomach or intestines often take place in the last stage. Sometimes the disease is very rapid in its progress; frequently it runs its course in thirty hours. It is said that if the patient survive the fifth day, the bubo being completely formed, he may be pronounced to be doing well, if not actually out of danger. As in the acute eruptive diseases, there are two pe-

riods fraught with greater danger than others, viz. that at which the bubo makes, or ought to make, its appearance, and that at which it ought to be matured.

The convalescence, as in all severe fevers, is very slow, which is attributed to the extremely debilitated state in which the patient is left; but there can be little doubt that a great deal is generally owing to bad nursing, and want, perhaps, of sufficient comforts.

It is a curious and interesting fact, that Sir James M'Grigor and Sir John Webb, the former the director-general of the medical department of the army, the latter director-general of the medical department of the ordnance, should have distinguished themselves in the same field of investigation, having been both employed with our Egyptian army twenty-eight years ago, when they displayed that talent, zeal, and humanity in the performance of their duties, which endeared them to all who were placed under their care. It was there these distinguished persons also gave evidence of the great powers of mind and regular habits of business, which marked them out, as men admirably qualified for the high situations in which they have been subsequently placed, and which they have filled with so much honour to themselves, and benefit to the service. Their statements respecting the plague, will be read with much interest and advantage *.

Treatment.

Sydenham recommended free and repeated venæsection in this disease, during what may be called the eruptive fever, and it has occasionally been practised since his time; but even Sydenham himself seemed latterly to prefer sweating the patient, under the idea of withdrawing the pestilence in that way from the body, which weakened him less than blood-letting. Some individuals condemn bleeding entirely. The same difference exists with regard to purging; in truth, there is as much diversity of opinion respecting the proper treatment of the plague, as that of the ordinary fever of this country. The

* Sir James M'Grigor's Medical Sketches of the Expedition from India to Egypt. Sir John Webb's Narrative, 6th vol. Medical Transactions.

application of oil to the surface of the body is believed to be a preservative against the disease, and it has also been employed to cure it; but even upon these points, such opposite statements have been promulgated, that we have no means of forming correct opinions. A great number of other remedies have been strongly recommended, as mercury, wine, and bark, camphor, opium, and æther, emetics, diaphoretics, and the cold affusion; and if my notions of the disease be at all correct, there are cases and stages in which several of these remedies, if not all of them, may prove highly beneficial; but there are others in which they must have the very opposite effect. For example, if there is violent inflammation and congestion of the brain, no one will say that wine, æther, bark, or camphor, are the proper remedies; but in which cold affusion on the head, and the action of mercury, might be beneficial. In the last stage of the disease, the lancet would be most improper, when wine, æther, opium, and even brandy itself, may snatch the person from the grave. If the stomach is irritable, which it almost always is in this disease, no one, I hope, would think of making it more so by exhibiting emetics and large doses of bark. It is to be feared that the recommendation and condemnation of various important remedies have taken place, without reference to the stage of the disease, the particular organ or organs affected, the peculiarities of the prevailing distemper, as well as the idiosyncracy of the patient; but it becomes me to speak with diffidence upon a subject, with which I must acknowledge myself to be very imperfectly acquainted.

The reader who wishes for more minute information, must peruse the various works published upon this subject; or a most excellent abstract of them, in the 3d volume of Dr Mason Good's Study of Medicine. The chapter on the plague appears to me to be the most meritorious part of his work.

PART II.

DISEASES OF THE ORGANS CONNECTED WITH THE DIGESTIVE SYSTEM.

CHAP. I.

DIFFICULT DENTITION.

FEW children go through the process of Dentition without some suffering; and when it is difficult, a variety of complaints arise which come under the denomination of Infantile Diseases. These are fever, determinations to the head and convulsions, cough, bowel complaints, cutaneous and glandular affections, sore eyes, and sores behind the ears.

It has been long remarked, that children who teethe at an early period, have least suffering; and the same observation has been made with respect to those who have a considerable flow of saliva. There have been instances of children born with teeth, which happened, it is said, to Richard III. and Lewis XIV., and Haller has cited a considerable number of such cases.

Some infants cut the first pair by the end of the third month; in other instances, not until they are sixteen and eighteen months old. In general, however, they are cut between the sixth and eighth month. The two centre incisōrs of the lower jaw appear first; in the course of a month, their opponents in the upper jaw protrude; after this, the two lateral incisors of the lower, and then those of the upper jaw appear. Between the twelfth and sixteenth month, the anterior grinders of the lower, and then those of the upper jaw are cut; subsequently the cuspidati or eye-teeth protrude, and after these the posterior grinders; so that children

usually have the first set of teeth (twenty in number) complete, by the time they have attained the age of two years, or two and a half. There are intervals of several weeks between the cutting of each pair.

The formation of each tooth goes on in a membranous and vascular sac, which is firmly united to the gum; and if we attempt to tear the gum from the jaw, the sac is brought along with it. This sac, it would appear, subsequently becomes absorbed; but when it is thicker than usual, more vascular, and long of being absorbed, it is one of the alleged causes of Difficult Dentition. The irritation produced by the pressure of each tooth against the gum, in its advancement to the surface, particularly when the child teethes late, and the gums are hard and cartilaginous, also occasions the different phenomena which are ranked under the name of Difficult Dentition.

A child under such circumstances is observed to be restless, fretful, and feverish; it sleeps little in the night, and is seized with sudden fits of screaming. The bowels are out of order, and the evacuations are fetid. On some occasions, it has a flushed face, and other marks of determination of blood towards the head take place, evinced by great restlessness, sudden fits of crying, apparent suffering when brought into the erect posture, startings, slight convulsive movements of the muscles of the face, and even general convulsions.

Many children, whenever they are cutting a tooth, are teazed with a cough, and on listening to the chest, bronchitis will, on such occasions, be generally discovered; indeed, the wheezing is so loud as not to require the close application of the ear, it being distinctly heard at a little distance. Others suffer from constipation, while many are afflicted with troublesome diarrhœa.

Cutaneous and glandular affections are often observed during Difficult Dentition. The glands of the neck, and the submaxillary, are those generally affected. Of the eruptions, the herpes larvalis and lichen are those most commonly seen. The glands sometimes, under bad management, suppurate.

Occasionally there is inflammation of the eyes, frequently

it is that form which is termed ophthalmia purulenta; and very often sores take place behind the ears, which seem to operate beneficially. This statement will shew the propriety of examining the mouth, when called to a child labouring under these, or any other affections, during the period of Dentition; the best remedy is dividing the gum, down to the very tooth, by crucial incisions; and it may be well to mention here, the appearances the mouth will have under such circumstances. The mouth may be very hot, and on examining the gum over the tooth which we suspect, it will be found to be elevated, very red, or sometimes white and shining: the ridge or seam, which runs along the jaw, in the direction of the teeth, will be found to have disappeared. Under such circumstances, the tooth may be pronounced to be far advanced; at all events, it is well to be able to say whether it be near at hand or not, as mothers are often disappointed if the tooth, over which the gum is cut, does not shew itself in a day or two; whereas, if they are told beforehand that it is not so near, they will in general be satisfied. Many people entertain a dislike to this operation, from an idea that the gum is hardened by the cicatrix; but they may be safely assured that this is not the case, and that the tooth will be advanced, certainly not retarded, by the scarification. If the operation be effectually performed, it forms the principal part of the treatment in such cases; for even should the gum heal immediately, the bleeding removes the local inflammation, upon which the febrile symptoms will frequently subside. The bowels must be kept freely open, and the tepid bath is often of great service. If the face is flushed with other marks of determination to the head, the application of cold may be tried. Great opposition is often made when medical men recommend that a child should sleep without its cap. The child should not repose upon a soft pillow; frequently have I seen it advantageous, to change a down pillow for one filled with fine shavings. It is probable that some of the serious affections of the head to which children are liable may be attributed to warm caps and soft pillows. The bowels must be more freely acted upon; and if these means do not succeed,

it will be well to apply leeches to the feet, which may be subsequently placed in warm water, for the purpose of encouraging the bleeding; besides which, the hæmorrhage is better under command upon the application of a bandage. Many practitioners are heard to complain of the great difficulty in stopping the bleeding in young children, but I have never experienced any myself. In the *first* place, we ought always to point out the situation where the leeches are to be placed, which I take care shall be, if possible, over a bone, against which pressure can be applied; *secondly*, not to apply too many at a time: it is rare to find more than one orifice troublesome, from which the bleeding will be easily suppressed, by gently pinching the skin between the finger and thumb for a few minutes. I have never been obliged to use the actual cautery, or even caustic.

We are often not called, however, till convulsions have actually taken place, which are to be treated in the manner to be subsequently described. I may, however, mention here, that the child should be put into a warm bath as soon as possible; the face sprinkled with cold water; and if a fit should continue long, and threaten danger, a vein should be opened on the instant. Should the external jugular be readily observed, blood may be drawn from it; but if a vein cannot be found, the hot bath and stimulating frictions must be trusted to till leeches are obtained. Great attention should be paid to keep up a brisk action in the bowels, by means of suitable doses of calomel and jalap, or calomel combined with rhubarb or scammony, together with castor oil and injections; but all these will be of no avail unless the gums be freely scarified.

Cough is occasionally a troublesome attendant on teething, and practitioners will be found, in general, to act empirically, unless they ascertain whether it depends upon any diseased action in the lungs, or merely upon irritation about the epiglottis and pharynx. If the latter, a common cough mixture may do good; but it will be inefficacious, perhaps injurious, if the cough proceed from bronchitis, which may sometimes require the application of leeches or of a blister, or

counter irritation produced by the ointment of tartar emetic. If the lungs are very much loaded with mucus, which is easily discovered, an emetic will be found very serviceable; but the treatment of bronchitis need not be dwelt upon in this place. It is only necessary now to state the general principles, with reference to the affection under consideration.

When a child has diarrhœa, who is suffering from Difficult Dentition, we should not be in a hurry to check it, particularly if there be marks of determination to the head. The bowel complaints of children are of so much importance, that it is necessary to treat of them in a separate article, with a view to point out their pathology; but it must be mentioned in this place, that the best thing to be done is to exhibit a little castor oil in the first instance, and if there is any pain, warm fomentations are to be applied to the abdomen; if there are still signs of suffering, a leech or two may be put on it, followed by very small doses of Dover's powder, or a drop or two of Battley's sedative solution of opium.

It is very fortunate that children, upon the occurrence of the most trifling febrile symptoms, or disorder of the bowels, should be so liable to eruptions, because they act beneficially by removing irritation and increased action, on many occasions inflammation itself, from internal organs, which will be fully explained and illustrated in that part of the work which treats of skin diseases. When these eruptions take place during the course of Dentition, it will be almost always found best not to meddle farther with them than to enjoin cleanliness; indeed, on many occasions, do what we will, the eruption remains the same, the child becoming better between the periods of cutting the teeth, and worse when they are irritating the gums. I have frequently seen great mischief done when external applications had the effect of destroying the eruption, and on more than one occasion death itself. In the porrigo larvalis, when there is great heat, itching, and particularly inflammation, I have found it answer well to apply leeches to the inflamed surface. The child's hands should be muffled, to prevent the face from being scratched, which might leave ugly marks.

Glandular affections may be safely let alone, unless they be-

come inflamed and painful, when the practitioner will do well either to apply leeches or a soft warm poultice. If matter forms, the sooner it is let out the better, in whatever constitution it may occur, there being far more danger of leaving a disagreeable mark, by allowing the matter to find its own way out, than by using the lancet.

We are often consulted respecting inflammation of the eyes at this period of life; generally speaking, the disease will be found to be confined to the conjunctiva; sometimes to the tarsi; rarely is there deep-seated inflammation of the eye itself, unless the case has been mismanaged. The only means by which we can ascertain this, is by examining the cornea and iris, and by observing whether or not the child avoids the light, when the case must be managed accordingly. A leech or two applied to the temple, is always safe practice, as well as a blister behind the ear; indeed Nature points this out, by the relief which supervenes upon a natural sore appearing in that situation. Let me add, however, that whenever we have occasion to blister a child, we should be careful that none of the powder of cantharides is sprinkled upon the surface of the plaister, which frequently creates unnecessary irritation; and above all, the blistered surface should be carefully examined every day by the medical attendant, till it shews a healing tendency, as it is apt to slough, which the timely application of a linseed poultice will very frequently check. With respect to the natural ulcerations that take place behind the ears, it is only necessary to use frequent ablution with warm milk and water, and to take care that they are not unnecessarily irritated. Great uneasiness is often produced in removing the dressings, which is quite unnecessary, and can always be avoided by previously applying tepid fomentations.

Under all the circumstances which have been mentioned, an occasional opiate is very beneficial; but no medicine of this kind should be left in the way of an ordinary nurse, who will often administer it unnecessarily, to secure to herself a quiet night, to the great injury of the child; even Dalby's carminative, or syrup of poppies, should never be left in the nursery, as I have known many children destroyed by their constant

exhibition. The American soothing syrup is another remedy which is too frequently ordered by medical men: it is supposed to soften the gums, and to render the process of teething much easier; it does actually appear to ease the child, not by mollifying the gums however, but by virtue of a narcotic principle which it contains.

Before concluding this subject, the use of gum-sticks may be briefly noticed. A child when teething carries every thing to its mouth, which it bites, and seems thereby to experience relief, and nothing will be found to please it more than the nurse rubbing its gums with her finger; this is one advantage of a gum-stick; it also promotes the flow of saliva, and amuses the infant.

CHAP. II.

DIFFICULT DEGLUTITION FROM INFLAMMATION, ULCERATION, AND ENLARGEMENT OF THE TONGUE; CYNANCHE TONSILLARIS; CYNANCHE PHARYNGEA; INFLAMMATION AND ULCERATION OF THE ŒSOPHAGUS.

MANY other circumstances produce difficulty in swallowing, as for instance, want of the uvula, tumour in the pharynx, ulcerations in the larynx, and upon the epiglottis. The two first belong more to the surgical department than the medical, and therefore cannot be treated of in this work; the last will be noticed among the diseases of the respiratory organs.

Difficult deglutition may be produced by inflammation, ulceration, and enlargement of the tongue; which are often caused by the action of mercury and other metallic poisons. If the affection is produced by mercury, leeches applied to the cheeks are said to be very useful, as also a wash composed of a solution of the chlorate of soda. Several serious cases of inflammation of the tongue have lately been published. Two will be found in the 92d and 93d Nos. of the Edinburgh Journal, and a fatal one in the 214th No. of the Lancet. In these cases, bleeding and leeching produced only temporary benefit, and deep scarifications were had recourse to. If I can trust my own observation, I am inclined to believe, that the inflammation and enlargement of the tongue, are owing to some temporary dis-

eased action in the chylo-poietic viscera. I may appeal to the experience of any professional man, who is liable to derangements of the stomach and bowels, whether he has not, on such occasions, felt his tongue sometimes swollen and painful, and even slightly ulcerated in different parts of the tip and edges; and whether he has not attributed such a condition to the state of his digestive organs. Whether this view be correct or not, the stomach and bowels must be attended to in the treatment.

Children in particular, are very liable to white specks, or vesicles, or ulcerations appearing on the tongue, and over all the mucous membrane of the mouth and fauces. These specks are called aphthæ; we meet with this affection in a very mild, or very severe form. In the first, all the treatment required is to keep the bowels gently open, and avoid solid food, together with the use of the warm bath. In the last, I feel persuaded, from the vomiting and the purging, and the intensity of the other symptoms, that the disease affects considerable portions of the intestinal tube. Before the appearance of the ulcerations in the mouth, the constitutional symptoms occasionally run high, which are sometimes relieved upon the mouth becoming sore; so that this affection approaches to the exanthemata. Mr Burns, in describing this disease, states, that "the child is sometimes drowsy, and oppressed for some hours, or even a day or two, before the spots appear, and occasionally is affected with spasms. The fever and oppression are often mitigated on the appearance of the aphthæ." Children affected in this manner, suffer great pain, and are consequently exceedingly peevish. The stools are generally very acrid, sour and discoloured; there is often tenesmus, prolapsus ani, and the surface is excoriated around the anus. Successive crops of aphthæ appear, which resemble small portions of curdled milk adhering to different parts of the tongue and mouth; after a time they become yellow, and seem to slough off, but may be renewed many times. When they drop off, the parts below frequently look raw, particularly in severe cases, in which the crusts sometimes become dry and hard; occasionally the parts look very foul, dark-coloured, and have a fetid smell. A case of an adult lately fell under my observation, in which great

suffering was produced; the sloughs were most extensive, and portions even of the palate itself were thrown off.

There are evidences also of the extension of diseased action in the air passages, announced by dyspnœa and cough. Children brought up by the spoon, are more liable to aphthous affections than others, as well as those whose bowels are neglected; insufficient clothing may also be considered a cause.

Treatment.

This pathological decription of the disease, leads at once to the proper mode of practice. I can speak strongly of the advantages derived from the frequent application of leeches to the abdomen, in severe cases, if the child is strong, the warm bath and counter-irritation excited on the abdomen by means of a stimulating embrocation, or the tartar-emetic ointment. The contents of the bowels should be discharged by an occasional dose of castor oil. An opiate injection, composed of a few drops of laudanum in a table spoonful of starch or gruel, may be thrown into the rectum, by means of a small penis syringe, but it is difficult at all times to make a child retain it. Dover's powder united with aromatic powder, is also a good remedy.

If the child is upon the breast, no other food should be allowed; if not, ass milk is if possible to be provided; but if it cannot be procured, whey mixed with a little cream, and occasionally a little very thin gruel may be substituted; beef tea, and soups of all kinds, are bad according to my own experience, until the disease is upon the decline; if the child's strength is sinking, wine properly diluted, is far less objectionable than soups. A weak solution of the chlorate of soda will be found serviceable; a tea spoonful may be given at a time, not as a gargle, but to be swallowed. Considerable mischief is sometimes done, and children are very much and unnecessarily fretted, by the application of borax and sugar introduced into the mouth upon a cloth, or a finger, and rubbed so as to remove the crusts.

CYNANCHE TONSILLARIS.

THERE are two varieties of this affection, the acute and chronic. In the acute the swallowing is difficult and painful; the voice is altered, and in very bad cases the respiration is also affected; the pain, generally speaking, is severe. On looking into the throat, the tonsils, uvula, and even part of the palate, are seen much swollen, so much so, as occasionally to give the appearance as if the passage were entirely closed. The parts are highly vascular, and sometimes the throat is swollen externally. Loss of appetite, thirst, sometimes headache, and general fever, accompany this disease; occasionally these symptoms run high, and there is delirium. In some cases only one tonsil is inflamed; in others, the uvula only; sometimes white specks are seen upon the inflamed parts, surrounded by a viscid exudation, which present the appearance of ulcerations. The white specks alluded to, are produced by sebaceous matter, making its escape from the mucous follicles. Occasionally, however, ulcerations are observed.

Cynanche tonsillaris terminates in resolution; sometimes in suppuration and ulceration. When matter forms, the patient's sufferings are generally increased, the dyspnœa is considerable, and he is said in common language to have a quinsy.

The most frequent cause of this complaint, is supposed to be cold produced by sudden vicissitudes of weather; but I imagine there is a combination of causes in the production of inflammation of the throat, and that the principal one is a disordered state of the stomach and bowels. Many individuals are known to me, who never have a sore throat, unless the stomach and bowels have been for some time out of order; as well as others, who for a series of years have escaped an attack, by regulating themselves properly in this respect.

Treatment.

In individuals liable to quinsy, the disease is very little under the power of any of the usual remedies, unless it is attacked at the very beginning; and it is only in such cases, or to check the inflammation from running into extensive ulce-

ration and sloughing, that any one would think of opening a vein. Leeches may be applied externally, and also internally to the part immediately affected ; in which last case, each leech is introduced by means of a tube, with a thread run through its tail ; but they have never been used by me in this manner ; when it is thought necessary to draw blood from the part affected, it is much more easily done by scarifications, and less painfully to the patient. Leeches can only be expected to act beneficially when employed early and in sufficient number. I have ordered on two dozen, thinking to stop the progress of a quinsy, but have always been disappointed. The same remark may be made with respect to blisters, which are very useful under other circumstances. Females have a great objection both to leeches and blisters ; but particularly to the former, from the marks they produce. Laxative medicines are highly necessary, and must be frequently repeated. Emetics and different kinds of gargles are much extolled, but I cannot say much in their favour. The best gargle, if any thing is necessary to wash the throat, is a little warm water, or acidulated infusion of roses. Inhaling the vapour of very hot water is productive of great benefit, whether suppuration is to take place or not, as it eases the pain. When matter forms, dyspnœa frequently becomes a marked symptom, and the sooner the abscess is opened, the better for the patient ; and it is by no means a painful operation, the relief being often instantaneous. Many fatal cases have come to my knowledge, although I have not seen one myself ; but it is strongly suspected that the cause of death has been bronchitis, or inflammation extending into the larynx.

Cynanche tonsillaris, when neglected, leaves a thickening of the parts ; the uvula is found enlarged and hard, as are the tonsils. Chronic inflammation also produces the same state of parts. If the case is recent, stimulating applications are to be used, and a succession of blisters to the throat ; if these means do not succeed, the patient is to be handed over to a surgeon, who will most probably excise some of the parts.

Sometimes extensive and troublesome ulcerations are produced, as the effects of chronic, as well as of acute inflammation in the throat ; and in treating these, it is necessary in the first

place to attend to the general health, by regulating the state of the stomach and bowels, and also the diet, which ought to consist of mild and digestible substances. Sometimes leeches and blisters are found serviceable; but the most efficacious application, is a solution of the nitrate of silver in distilled water, in the proportion of four, six, and even ten grains to the ounce. The ulcerated surface is first to be carefully washed, and then the solution is to be applied by means of a brush. This operation, however insignificant it may appear, must be done with proper care, as bad consequences have been known to follow. There is a preparation in my museum, in which the epiglottis is completely destroyed by common caustic, rudely used; and the whole mucous surface of the larynx and trachea is ulcerated.

INFLAMMATION OF THE PHARYNX.

In this affection the tonsils and uvula are not necessarily inflamed, but upon looking with a bright light, we can often see the throat and pharynx loaded with viscid lymph, which the patient is constantly making efforts to dislodge by hawking and spitting. The pain on swallowing is fully greater than in the last described disease, and I have seen patients suffering severely, and some apparently in great danger. When it is severe, the lancet must be used, followed or not by the application of leeches and blisters, according to circumstances. The inhalation of the vapour of hot water mitigates the symptoms very much, and in slight cases, nothing else is required but to keep the bowels open, and the antiphlogistic regimen.

INFLAMMATION AND ULCERATION OF THE ŒSOPHAGUS.

According to my observations, of all the structures in the human body, the œsophagus is the one most frequently found in a healthy state. In general it is difficult to detect inflammation of the œsophagus till ulceration and constriction take place. I have only seen one case of universal inflammation in this tube which was not caused by poison, and in which

the lining membrane was in a state of mortification; there is a preparation in my museum which displays the same appearances, but in which there were no symptoms indicative of disease in the tube. In the case which I attended, there was pain and difficulty in swallowing; and the pain continued till the substance swallowed got into the stomach. But both patients were also affected with Phthisis. Inflammation may be very partial and slight, affecting only a part of the calibre of the œsophagus; and if ulceration follow, there will be no contraction, but the patient will feel slight pain and a momentary stoppage when the bolus of food arrives at the spot. If the whole calibre of the œsophagus is involved in the inflammation, the pain will be more considerable, with increased difficulty in swallowing, not so much from constriction as from the effort to vomit, which is produced by irritation. If it terminates in ulceration, occupying the whole tube, constriction will take place with increased difficulty in swallowing; patients have been known to be three and four days, and even a week, without food.

Treatment.

Attention to the bowels, topical bleeding, and extensive counter-irritation, are the best means which can be employed. Nourishing injections thrown into the rectum, are to be assiduously administered at times when the patient is unable to swallow a sufficient quantity of food. It is the practice in such cases to introduce instruments into the œsophagus, to produce dilatation; but I have seen it very injurious in several cases, when had recourse to during the inflammatory stage. Affecting the system with mercury has been highly extolled, but perhaps without sufficient consideration. If the constriction is permanent, after the inflammation and irritation are subdued by the means recommended above, then a surgeon is to be called upon to make cautious trials with a bougie; perhaps an œsophagus tube will be found the best instrument for this purpose; the common probang appears to me to be inefficient, if not injurious.

CHRONIC AFFECTIONS OF THE ŒSOPHAGUS.

The medical journals are filled with cases of this kind. Sometimes the gullet is diminished in diameter by fleshy excrescences, tumours; and occasionally scirrhus contractions are observed; and more rarely ossification. Some individuals have survived contractions of the œsophagus for a great many years, being obliged to have food introduced into the stomach through a tube. These diseases of the œsophagus are difficult to trace, and are frequently found to have made considerable progress before they were even suspected.

The smoke of tobacco and stramonium, the abuse of mercury, and drinking fluids either excessively hot or cold, have been assigned by writers as the general causes, but perhaps too hastily.

Of all the remedies which have been recommended to us in such cases, the bougie is undoubtedly the best; and if at any time there should be much pain, leeching, counter-irritation, and narcotics, are to be had recourse to.

CHAP. III.

INDIGESTION.

Under this head I shall treat of the affection which is commonly called Dyspepsia, with its usual attendants, Flatulency, Tympanitis, Heartburn, and Pyrosis; and also of the painful affection termed Gastrodynia.

Dyspepsia is a most troublesome disease to treat; and I believe the physician, to be able to do so properly, should have suffered from it himself, as one who has had the good fortune never to feel as if he had a stomach, cannot believe, or almost listen to, the complaints of those who have experienced that sensation. One symptom is more prominent and urgent in one case than another; a little flatus in the stomach occasionally produces violent nervous symptoms, sometimes as if the head were seriously affected; and the whole will vanish after one or two sour eructations. Some patients appear as if they could not survive the difficulty of breathing under which they labour; and it will be found to depend, perhaps, on flatus rising in the œsophagus, producing the affection called *globus hystericus*. Remedies have not the same effect in any two cases; all plans of treatment will most generally fail, unless the patient himself can discover what articles of food agree with him better than others, and has resolution enough to adhere to a proper regimen. Dyspepsia may arise from various causes: *First*, from simple functional derangement of the stomach, duodenum, liver, spleen, or pancreas; *secondly*,

from indigestible and acrid substances taken into the stomach; *thirdly*, from structural derangement in the digestive apparatus; *fourthly*, from long-continued constipation; *fifthly*, from derangements in other important organs.

Dr Wilson Philip, who has written an excellent work upon this subject, has divided the disease into three stages. This plan would do admirably well, if dyspepsia were as regular in its march as intermittent fever; but in practice, such an arbitrary arrangement will not be found to answer, because the second, or even the third stage may be produced at once, without advancing regularly through the others.

The first symptoms of indigestion are a sense of fulness and uneasiness in the region of the stomach, arising either from too great a load of indigestible food, or from flatulent distension of the stomach; frequent acid eructations, constipation, loaded tongue, and some thirst. Sometimes sore throat is complained of; it is difficult to keep the hands and feet in a sufficient degree of heat; and occasionally severe headache takes place.

These symptoms may steal on slowly, and from being only felt occasionally, are neglected; or they may be produced suddenly, by indulgence in a copious draught of iced water, or from grief, fright, or other severe mental affections, or from too violent exercise, as riding on horseback soon after making a very full meal.

Physicians are rarely consulted in this stage of the complaint; for the patient either drives on through it, or relieves himself by a day or two's abstinence, and by taking a laxative. If a person, however, takes little heed of himself, he is soon heard complaining of restless nights, by and bye of oppression at the præcordia, and at last, is sensible of diminution of strength, and heat of skin; his appetite becomes fastidious; he is either very costive, or is affected with diarrhœa. The alvine discharge is sometimes very bilious; at others white, shewing a want of bile; it is sticky, drops with difficulty from the body, and is very fetid; and even after he obtains a passage from his bowels, he feels much loaded, and very often considerable quantities of half-digested food will be observed in the stools.

Persons labouring under such symptoms, will very generally be heard to attribute their complaints to a "*fit of the bile*;" and many medical men, I fear, confound stomach disorders with those of the liver, and exhibit mercurial preparations, to the great injury of the patient.

Treatment.

The cure of this form of the complaint is easy. The patient is to be directed to avoid soups, and whatever else distends the stomach, to eat little, and to leave off while he still has an appetite; to keep his bowels open with a little rhubarb, Henry's calcined magnesia, or a compound colocynth pill; and to take regular exercise without fatigue.

The second stage of dyspepsia is marked, according to Dr Wilson Philip, by the supervention of tenderness in the epigastric region, and a hard pulse; and he very justly considers these two symptoms of much practical importance. The patient now feels very sensible to the impression of cold; he is often chilly, and afterwards complains of flushes of heat; his hands and feet have sometimes a dry, burning sensation, particularly during the first part of the night, extremely cold at other periods, painfully so when he first goes to bed; his skin becomes hot in bad cases till towards morning, when a perspiration breaks out, and the patient enjoys some quiet sleep; when he awakes, although he may complain of not feeling refreshed, yet the symptoms are greatly relieved. His debility is now greater, with some emaciation; he complains of languor, and very often desponds. There is considerable uneasiness and fulness in the epigastric region, and an occasional darting pain towards the spine, together with a burning sensation in the stomach. Palpitations are now, perhaps, very troublesome; they are not constant, however, but become worse after dinner; the least thing agitates the mind, and produces them. The patient also coughs and expectorates in the morning, and he supposes that he is phthisical; or there is vertigo and headache, with imperfect vision, as, for instance, seeing two objects instead of one, or only half an object, and it is impossible to persuade him that he is not threatened with apoplexy.

In cases of dyspepsia, some individuals, particularly those with light hair, are very liable to inflammation of the tarsi, with purulent exudation; and sometimes little abscesses form, which are called in common language "styes." The kidneys frequently suffer, the flow of urine being either too sparing or too copious, attended with complaints which are called "gravelish;" and it is my belief that dyspeptics are more liable than others to inveterate skin diseases, and to stone in the bladder. It will also be found that most of the individuals labouring under piles are dyspeptics; and it may be mentioned, that I have rarely seen a person afflicted with fistula in ano, excepting when it proceeded from external injury, who has not been a martyr for a long period to this class of complaints. Pure surgeons should know this, and a great many other points of medical pathology.

It is rare to see all these complications, but they are occasionally met with; the patients consider their lives as burdens to themselves, and there is often a strong tendency to commit suicide.

Should such symptoms continue for any length of time, some serious organic lesion may be dreaded; but the lungs and liver most frequently suffer, and this is what may be termed the third stage of dyspepsia.

Treatment.

In considering this part of the subject, it would be needless to dwell upon the plan which ought to be pursued in the third stage, when some organic lesion is supposed to exist, as it must vary according to the organ, and the nature and extent of the affection; my present observations shall be confined to that part of the disease which is called the second stage.

Whenever there is tenderness in the epigastric region, with a hard pulse and bad nights, local bleeding by cupping or leeching often produces the best effects. My own plan, in severe cases, is to apply leeches, to the number of twelve or eighteen, two or three times if necessary, before counter-irritation is had recourse to; and the best method of producing irritation, is by the tartrate of antimony ointment, which must be persevered in, first on one part, then on another, so as to produce alternate and successive crops of pustules. All this will

be of no use, however, without close attention to a number of other circumstances, particularly to diet. In the severest cases, it should consist of gruel, milk, calf-foot jelly, and good bread; and these should be allowed in limited quantity; more than a breakfast tea-cup full at a time will overload the stomach. Soups, puddings, and vegetables, should be avoided for some time. Gentle laxatives, so as to open the bowels twice a-day, are to be used. The warm bath will be found very useful; but perspirations are not to be encouraged after coming out of the bath. The patient should be clad according to the season of the year; and it is of great consequence to keep the feet comfortably warm and dry; in order to ensure this, worsted stockings are directed to be worn, which, in many individuals, will produce the very circumstance it is wished to avoid. It was a long time before I could discover the cause of this; and I believe I may now state confidently, that worsted stockings, worn by people whose feet perspire, will tend to produce coldness of the extremities; under such circumstances, I find it always answers, if the patient wear an under stocking either of silk or thin cotton. Exercise in the open air is highly necessary as soon as the patient's strength will permit; if he rides on horseback, the feet should be additionally protected in cold weather by mud boots, and he should never make use of horse exercise for two or three hours after a meal. By degrees, he may be allowed a small tea-cup full of chicken or beef tea; subsequently, he may eat part of the breast of a chicken or game to dinner, till he is able to return to ordinary fare. The physician, in severe cases, ought to insist on his patient keeping notes of his diet, particularly during his recovery, which will enable him to compare his present state of health with the articles he had eaten the day before. The best diluent he can have is an infusion of camomile flowers and lemon-peel. Stimulants are to be commenced with great caution, not until the pain in the epigastric region and heat of skin are subdued; perhaps the best stimulant is cayenne pepper with food, which affects the whole bowels as well as the stomach, and tends to obviate constipation. Ginger tea, if made with the fresh root, or with preserved ginger, will also be found serviceable, together with a glass or two of good sound wine once or twice a-day.

Wine sometimes, however, produces acidity, in which case a small quantity of brandy in water is found an agreeable substitute.

Dyspepsia is one of those diseases too generally treated, from its name, by a kind of routine practice, without reference to the pathological condition of the body on which the numerous symptoms depend. If a routine practitioner were asked, what he would prescribe for a person who had dyspepsia? he would quickly reply, tonics! I have no objection to the medicines which are usually administered under the denomination of tonics, provided they are not given for the purpose of running up a bill, or prescribed at times when something better might be done for the patient. But I have some doubts respecting the truth of the received notion of their action, I do not think it is by giving tone to the stomach. These remedies are bitter, and, I imagine, produce increased secretion of the fluids connected with the digestive process. On putting a little quassia or gentian into the mouth, it fills immediately with saliva, which continues as long as the taste is perceptible, and even afterwards, when the person thinks of the bitter taste. May not the same circumstance also happen with the other secretions?

If the liver is not doing its duty properly, calomel or the blue pill may be exhibited at bed-time, followed by a very small dose of salts in the morning; but it is a despicable practice to give blue pill in every disease connected with the digestive function. And it is much to be regretted, that the name of Abernethy should be associated with such insufferable quackery.

The above treatment is to be persevered in for a long time, changing the diet and the laxatives now and then, but continuing the counter-irritation and application of leeches alternately. After a time, cold bathing in the open sea, the shower bath, or sponging the body with vinegar and water, often produce the best effects.

The disease termed dyspeptic phthisis by Dr Wilson Philip, is only met with, generally speaking, in cases of long standing. My experience, however, leads me to state that

bronchitis is the primary affection in such cases, the tubercles form subsequently.

Flatulency and tympanitis are symptoms of dyspepsia, but require a few separate remarks along with heart-burn and water-brash.

Some people suffer extremely from flatulency and acid eructations. Five or six instances have fallen within my observation, of individuals who frequently passed enormous quantities of flatus upwards; and it is presumed these are cases to which Dr Mason Good would apply the term cholera flatulenta. In all such instances, the patients had previously eaten some crude vegetable substance: generally, the ordinary salad mixture, or radishes. The remedies which seemed to afford the greatest relief were æther, sometimes hot brandy and water, or brandy by itself, and essence of peppermint.

Tympanitis may be detected by percussing the abdomen; it is often a troublesome symptom, not only in this affection, but in fever; and the best remedy which can be used is turpentine. It is better to try it, in the first place, by injection, in the proportion of a table spoonful to eight or ten ounces of thin gruel, which the patient is to be desired to retain as long as possible. If this plan do not succeed, half an ounce is to be given by the mouth, with the same quantity of castor oil.

Infants suffer very much from flatus in the stomach and bowels, which will in general be found to depend, either on the pernicious and unnecessary custom of giving them castor oil and other substances to open their bowels, or food they are unable to digest. In truth, the moment an infant is born, and often before it is dressed, castor oil is exhibited, which produces griping; this is attributed to wind, and want of something to eat, therefore a quantity of gruel is given, which often increases the child's sufferings; and Dalby's carminative is then given, which affords temporary relief. Few infants can be expected to thrive well under such management. The usual remedies for flatulence in infancy are, dill water and oil of aniseed.

In some long standing cases of indigestion, particularly in old people, in women more than men, and those who live principally upon farinaceous food, a considerable quantity of lim-

pid fluid is discharged from the stomach by eructation. This is the affection which is called water-brash. I have also seen it accompany scirrhus of the stomach.

It attacks the patient generally in the morning and forenoon: at first considerable complaint is made of pain in the pit of the stomach, faintness, a sense of tightness, as if the stomach were closely drawn up to the back bone, and the uneasiness is increased upon moving into the erect posture; at last the limpid fluid is discharged in considerable quantity at different times, when the pain subsides; sometimes it has an acid taste, but in general it is stated to be insipid.

The best remedies are those which have been recommended in indigestion, together with a change of diet.

Heartburn is, next to flatulency, one of the most frequent symptoms in indigestion, and it is also one of the common attendants on pregnancy.

When heartburn exists, the patient complains of a burning pain in the pit of the stomach; every kind of food creates acidity, and hot, acrid eructations take place, which seem to irritate the œsophagus. Some women suffer very much from this symptom during the whole course of pregnancy, but the moment delivery takes place, it vanishes like magic.

Henry's calcined magnesia, and careful attention to the diet, often mitigate this complaint. The sub-carbonate of soda and potass are frequently used, and sometimes with benefit; as also, charcoal and chalk mixture. Cases are now and then met with, which resist all these remedies, together with leeches and opiates. The oxide of bismuth, sulphate of iron, and sulphate of zinc, have been highly extolled. I have often exhibited them in such instances, but without benefit. The chief points to be attended to, are the regimen and laxatives.

GASTRODYNIA.

The stomach is liable to a neuralgic affection, which is known by this name, as well as by the term Cardialgia. It is closely connected with dyspepsia, often occurring as a symptom; but it may exist as the primary disease; sooner or later, however, indigestion must follow.

Phenomena.

Impaired appetite, although sometimes it remains good; but this is rare. There is a gnawing pain in the stomach, extending very deep to the back, anxiety, sense of constriction, tendency to eructate, or to vomit, with occasional faintness. There is sometimes headache and constipation, and the patient is occasionally relieved after eructation; a considerable quantity of limpid fluid is sometimes discharged; in fact, it is often an attendant symptom of pyrosis. After a severe attack, a patient often escapes without another for a week, month, or even a longer period.

All the symptoms described do not take place in every case; sometimes there being only pain and anxiety, with some nausea, which are increased after taking food. It is almost unknown before the age of puberty. Besides, depending on a diseased condition of the nerves of the stomach, this affection is often occasioned by a diseased state of the pancreas, spleen, liver, and sometimes it is produced by scirrhosities of the stomach and duodenum, and is also a very troublesome attendant on gout. This disease has of late years excited a great deal of interest in France, as well as in this country; and although no additional light has been thrown upon the nature and seat of the disease, still very considerable practical advantages cannot fail to be derived from the writings of M. Barras, and Dr James Johnson.

The chief causes of gastrodynia, generally speaking, are supposed to be, long continued indulgence in indigestible food, the use of very hot or very cold drinks, dram-drinking, long fasting, worms. The chief articles which produce a paroxysm in an individual liable to the affection, are salads, and all other kinds of crude, uncooked vegetable substances, sweet-meats, new bread, cherries, nuts, olives, and above all perhaps, roasted chesnuts; therefore, the cure depends upon avoiding such articles in future, together with fat, oils, and butter.

During an attack, a vomit will often suddenly check it, if exhibited within two or three hours after the offending matter has been eaten; hot flannels are to be applied to the epigastric region; gentle laxatives, and the warm bath, are to be

employed, together with bitters, alkalies, magnesia; and in bad cases counter-irritation is to be persevered in for a considerable time. I have known one or two patients, who for many months at a time could not put any kind of food into the stomach, without previously taking a small dose of the sedative solution of opium; and we are told by Roche and Sanson, that in the worst form of this disease, which had resisted bleeding, bitters, and antispasmodics, Dr François found lactucarium successful. It is curious, that although sweet things generally aggravate the complaint, the extract of liquorice alleviates the pain considerably, and is also frequently used with benefit in heart-burn. Barras insists much upon the necessity of making the patient take animal food, although it may for the time increase his sufferings.

CHAP. IV.

DISCHARGES OF BLOOD FROM THE STOMACH AND BOWELS.

I. *From the Stomach.*—This form is termed Hæmatemesis. It sometimes proceeds from diseases of the liver and spleen, and also takes place occasionally in fevers; but these are not under consideration at present.

Hæmatemesis most frequently attacks women, particularly those who are unmarried, of a plethoric habit, and at times when there is an obstruction, or some other irregularity of the menstrual discharge, and who are constipated. Pure blood is seldom vomited, unless from external violence. This discharge rarely coagulates, and seems rather to be the product of passive hæmorrhage, or exudation from the vessels of the mucous membrane. It is supposed to be a very easy matter to distinguish this affection from those hæmorrhages which take place from the lungs; it is said to be preceded by a sense of weight, pain or anxiety in the region of the stomach, and unaccompanied by any cough, &c. But these distinctions will not answer in practice, and it is of great consequence to a medical man, not to give an assurance of safety, in a case which may prove fatal in a few minutes, as the following instances will shew.—A child was attended by Dr Yates, when that excellent gentleman was a pupil at my Dispensary. It had been for some time complaining of cough and anomalous symptoms, which were relieved

from time to time, and it was able at last to go to school as usual. Still it occasionally discharged a little blood, and died suddenly after *vomiting* a considerable quantity. On dissection, the stomach was found filled with a hard coagulum, and there was also a considerable portion in the small intestines in a fluid state. It was evident that there had been active hæmorrhage, but after the most minute investigation, no blood-vessel could be found from which it had issued. The people began to complain of the length of time we had been over the body, and became very impatient, so much so, that we were obliged to give up further examination; but the whole of the contents of the thorax, including the œsophagus and great vessels, having been carefully dissected out, were surreptitiously conveyed to my museum for minute inspection, and it was discovered that the blood found in the stomach and bowels, had proceeded from a ruptured artery in a cavern in the superior lobe of the left lung. A fistulous opening was found running upwards from this cavern, and communicated high up with the œsophagus; so that when ulceration produced a rupture of the vessel, the blood passed in this direction, and found its way into the stomach. The preparation is in the museum, together with an accurate and beautiful drawing by my friend Mr Alexander Thomson, a young but enthusiastic pathologist.

Another remarkable case also occurred in the Dispensary practice, in an old man. He had enjoyed remarkably good health, until lately, when his appetite became impaired, and he complained of dyspeptic symptoms, which gradually increased in severity, and he was at last reluctantly obliged to seek for medical advice, at the age of 72, for the first time, I believe, in his life. He complained of so much uneasiness in the region of the stomach, that he was cupped several times, and counter-irritation was produced over the part affected with considerable relief. One morning he discharged a little blood, between the act of coughing and vomiting, and he soon died after passing a considerable quantity. Upon dissection, it was a subject of general remark, that the external appearance of his

body, as to shape and plumpness, was more like that of a man half his age. Every internal organ also appeared sound; but on cutting through the stomach into the duodenum, the pylorus was found thickened and indurated, and an ulcer about the size of a horse bean was discovered in the duodenum, on the surface of which the gaping mouth of a large artery was discovered, from which the hæmorrhage had taken place.

Treatment.

As the disease generally attacks plethoric individuals, and is seldom accompanied by debility, or even oppression simulating debility, practitioners have no scruple in employing blood-letting during an attack, and it is frequently successful, by immediately checking the discharge. Quietness, cold acid drinks, and a course of laxative medicines, are also essentially necessary. If the hæmorrhage, however, recurs after bleeding, or should it take place in a constitution already debilitated, the acetate of lead, either in solution or in the form of pill, in doses of two grains every second or third hour, will be found serviceable.

II. *Hæmorrhage from the Bowels.*—This was formerly known by the term Hæmorrhoidal Flux, and it was believed by the ancients to be salutary; but now such a discharge is always regarded with anxiety, as it frequently tends to undermine the constitution, and like other long-continued hæmorrhages, leads to affections of the head,—a remarkable and fatal instance of which lately fell under my observation.

When blood is discharged by stool, it will generally be found to proceed from an injury done to the verge of the anus by a hard and constipated stool, or from the diseased excrescences which are found at the termination of the rectum, and known by the name of hæmorrhoids, vulgarly called piles. These have been divided into two kinds, external and internal, which last are also called blind piles. They may be said to be painful excrescences on the verge of the anus, or in the rectum, usually attended with a discharge of mucus or of blood.

The profession is not agreed as to their pathology; but

after a careful examination of the opinions which have prevailed, and of the diseased parts themselves, I feel convinced that there are at least four distinct kinds. 1*st*, Piles are sometimes nothing more than a varicose state of the hæmorrhoidal veins, with a slight thickening of the mucous membrane of the rectum. 2*dly*, They are formed by an effusion of blood in the sub-mucous tissue, with a slight thickening of the membrane itself. 3*dly*, They are also mere fungosities from the surface of the mucous membrane; and accordingly are found to vary very much in size, shape, and appearance. 4*thly*, A prolapsed state of the mucous membrane of the rectum, which subsequently becomes indurated, and in a manner strangulated, by the contraction of the sphincter.

Symptoms.

Individuals who are thus afflicted, suffer only occasionally, and then it is said, in common language, they have "a fit of the piles." A sense of fulness is felt in the rectum, attended with an occasional stinging pain, which is sometimes very severe and darting, increased when passing a stool, during which a quantity of blood is discharged. A strong desire is experienced to sit and strain, which is termed tenesmus. After this has subsided, a sense of heat is felt for a few minutes. But when the piles are external, they often swell enormously; are very tender, however small they may be, and sometimes ulcerate. In this case the discharge may be constant, taking place, however, in small quantity at a time; on other occasions, there is copious hæmorrhage, followed by relief from pain. When the inflammation runs high, induration of greater or less extent is left, in consequence, most probably, of effusion of lymph into the cellular membrane, to which may frequently be traced strictures in the rectum, and tubercular formations close to the verge of the anus.

Causes.—The injury done to the parts by the frequent passage of indurated feces; use of aloetic purges; long continued exercise in the erect posture; sitting on a cold or damp seat; and every circumstance which impedes the flow of blood in

the veins of the abdomen. The pressure of the gravid uterus, therefore, is sometimes a cause, as well as tumours affecting different parts of the uterine system. But it will be almost always observed, that individuals affected with piles, have been long and seriously afflicted with gastro-intestinal irritation *.

Treatment.—The bowels must be kept constantly well regulated by the gentlest laxatives, carefully abstaining from the use of aloes in any shape. A large mucilaginous injection, exhibited immediately before going to stool, will be found highly serviceable, and the best way of preparing it is by making a decoction of linseed. Sulphur has been erroneously supposed to be a specific. Balsam of capaiva was recommended and used by Dr Cullen, by introducing it into the rectum; but in the ordinary cases of blind piles, gentle laxatives, occasional injections of decoction of linseed, together with rest in the horizontal posture, and a moderately antiphlogistic regimen, will suffice. When the piles are external, tender, and inflamed, the application of leeches, or punctures made with a lancet, are often productive of great benefit, by diminishing the pain and tension. In severe cases the recumbent posture is actually necessary, and I have seen the inflammation run so high, and attended with so much suffering, as to require general bleeding. Poultices and warm fomentations are very serviceable in alleviating the pain, and sometimes anodyne injections must be had recourse to; it is productive of considerable relief, if the excrescence can be pushed within the sphincter. An ointment, made by mixing powder of galls and opium in hog's lard, is sometimes employed, but I believe it is more serviceable when ulceration takes place; a weak solution of nitrate of silver may also be employed.

If a great deal of blood is lost, whether at once or at different periods, a careful examination should be made with the eyes, as well as by the finger, in order to ascertain the exact

* The pernicious habit of taking a book or newspaper to read in the water-closet, at stool, is very frequently a cause of this unpleasant complaint.

point from which the bleeding proceeds, and it is necessary sometimes to apply caustic, the ligature, and even the knife; but these are matters of surgery. I would only further beg to insist upon the necessity of attending more than is generally done in these cases to the constitution, and particularly to the general condition of the mucous membranes; and young practitioners should bear in mind, that neglected cases of piles often terminate in fistula.

CHAP. V.

COMMON COLIC; PAINTER'S COLIC; ILEUS, INTUS-SUSCEPTION; INTESTINAL CONCRETIONS, AND PROLAPSUS ANI.

I.—COMMON COLIC may be produced by indigestible food, by constipation, and by a diseased condition of the biliary secretion.

Phenomena.

Griping pains and flatulent distension of the bowels, with a sense of twisting in the region of the navel, sometimes with contraction of the abdominal muscles; and occasionally, though rarely, with some degree of nausea and vomiting, which takes place more frequently when the affection is produced by the biliary secretion, and in which case there is generally looseness of the bowels, instead of constipation. Flatus is sometimes heard rumbling backwards and forwards in the bowels, which is more classically termed Borborygmus. The pain is not continual, but comes on in paroxysms, during which the patient thinks he experiences relief by violent pressure applied to the abdomen, which marks the affection from others of an inflammatory nature resembling it. But it must be recollected that cases of colic, when neglected, often terminate in inflammation of the bowels.

Treatment.

It is a most essential point to obtain free evacuations from the bowels speedily, particularly by means of injections; and

certainly the best is one composed of tobacco, in the proportion of half a drachm infused for ten or fifteen minutes in eight or ten ounces of boiling water; to be then carefully strained, and exhibited when sufficiently cool. If the attack succeeds immediately after a meal, an emetic may be given to dislodge the offending matter by the most speedy method. A considerable quantity of oil of cloves should be administered along with castor oil, or any other purgatives; or spirit of turpentine may be used by injection. Warm fomentations to the abdomen, or the general warm bath, may be employed.

Some cases of abdominal inflammation are attended by symptoms so slight as to resemble colic very closely, so much so, that in many instances it is difficult, and in some impossible, to determine this point of diagnosis.

In such circumstances it will be well for our patients if we do not attempt to refine too much; if in doubt whether the case be one of inflammation or of colic, it is our duty to give the benefit of that doubt by using the lancet, particularly if the bowels are obstinate. The advantage of opium is very doubtful till the bowels have been properly moved.

In a case of colic from vitiated bile, diluents, such as barley water, are to be employed, together with a weak solution of salts, and afterwards opiates. If the bowels are open, and we are perfectly satisfied that there is no danger of inflammation, a stimulant, such as brandy or hollands, is often beneficial.

Some women, at the menstrual periods, have griping pains in the bowels, more particularly in the colon, accompanied by considerable distension of the abdomen, attended or not by constipation; frequently the pain extends from the caput cæcum to the arch of the colon.

The best remedy is a turpentine or assafœtida injection, together with warm fomentations, proper regulation of the diet, and sometimes the general warm bath.

PAINTER'S COLIC.

This is also known by the names, Colica Pictonum, Devonshire colic; and in the West Indies it is commonly called dry belly-ache.

This is the form of colic produced by the introduction of lead into the system, whether in food, by respiration, or cuticular absorption. It is a disease which was long known and described before its cause was ascertained. The discovery was made in Germany about one hundred and thirty years ago, by detecting publicans putting a preparation of lead into their wines. It is said that the disease used to prevail in Devonshire, and other places where cider is manufactured, in consequence of putting lead into the casks, to render the cider sweeter. The disease also prevails in the neighbourhood of smelting furnaces and lead mines; indeed it is even said, in such situations, to affect the lower animals, such as poultry, pigs, &c. House painters, plumbers, potters, glaziers, and all who are compelled by their occupation to handle lead much, are subject to this disease, particularly if they are not well guarded by personal cleanliness. Sir George Baker* was the first who drew the attention of the profession in this country to this interesting subject. It must be mentioned, however, that cases do occur displaying the same phenomena, course, and termination, which have been produced by exposure to cold and damp, when there could not be the most remote suspicion of the action of lead upon the system.

Phenomena.

The pain never leaves its principal seat about the umbilicus and pit of the stomach; at first it is dull and remitting, but it gradually increases to be very severe and constant. The pain, in some severe cases, strikes through the back, and patients have told me that it resembled a stab through the body, others have felt as if they were cut in two at the umbilicus. In other cases, the pain extends to the arms and hands, down the back and pelvis, often affecting the lower extremities. The integuments of the abdomen feel retracted and hard, and I have seen the strongest men rolling and weeping like perfect children. The whole surface sometimes suffers from pains, which the patients ascribe to rheumatism;

* Vide Papers in the 1st and 2d Vol. of the Lond. Coll. of Physic.

there is always constipation, sometimes tenesmus, and occasionally sickness and vomiting. The sickness and vomiting are most severe at the height of the paroxysm; acrid mucus is sometimes vomited, or bile mixed with mucus, affording temporary relief. Hiccup sometimes supervenes, together with retraction of the testicles.

It is a matter which strikes every one with astonishment, that notwithstanding the violence of the symptoms, and the excruciating sufferings of the patient, the pulse is rarely much affected till the disease goes on for some time; in the end, however, it becomes quick and small. It has been remarked by some, that the feet and toes are occasionally affected, as in gout.

Spontaneous relief is said to follow a copious discharge of scybbalous matter, like sheep's droppings mixed with mucus and considerable quantities of blood. Occasionally also, it is said, sweating produces a crisis. Sometimes the disease produces palsy of the superior extremities, and occasionally it terminates in death, which is preceded by a loss of sight and hearing, delirium, and convulsions. One attack leads to another; that is to say, a predisposition is left.

Colica Pictonum is a most afflicting disease to treat; for do what we will, the patient is seldom relieved under a week, even when well managed, and relapses often take place at times when he is apparently doing well. He may be pronounced to be in great danger, however, when there is delirium, violent spasms, and convulsions.

Appearances on Dissection.

The following is an abstract of the appearances found on dissection, in the bodies of a number of individuals who died of this affection in the hospital of Beaujon, under the care of M. Renauldin. Redness, thickness, and ulceration of the mucous membrane of the alimentary canal, and often enlargement of the mesenteric glands, corresponding to the inflamed or ulcerated portions of this membrane. The redness varied from that of bright rose even to violet and brown; it was disposed in points, in streaks, and patches, and sometimes occupied an extent of several feet. The thickness was variable.

The ulcerations were found almost always towards the termination of the small intestines, near the valve of the colon, which was sometimes destroyed; and in cases where diarrhœa prevailed, ulcerations were also found in the colon: rarely were they observed in the stomach. They were sometimes more or less large, deep, and numerous; sometimes the stomach and intestines were perforated *.

Treatment.

The nature and seat of this disease are yet uncertain; but there can be no doubt, from the symptoms during life, and the appearances found on dissection, that the disease is probably seated, in the first instance, in the nervous system, and that we have to dread inflammation of the mucous membrane of the stomach and bowels. I have often tried local bleeding by repeated cuppings and leechings on the abdomen and flanks; and I can speak confidently, from experience, of the good effects of this plan. I have always had an unaccountable dread of opening a vein in these cases, perhaps from prejudices of education; but since I have seen the above account of the appearances on dissection, my objections to it are so far removed, that I shall hereafter try it cautiously.

The remedies next in importance, are calomel and opium, given in pills containing five grains of the former, and one or two of opium repeated at short intervals, so as to affect the system. This has been much insisted upon by my friend Dr Musgrave of the island of Antigua.

The bowels are extremely torpid in this disease, therefore common remedies must not be depended on; croton oil in doses of two, four, and six drops, must be given repeatedly at proper intervals, still continuing the calomel and opium. Turpentine is to be exhibited, both by the mouth and by injections. Large injections are to be administered; sometimes stimulating, at others unstimulating. Hot fomentations are to be applied; counter-irritation, when the disease is on the

* Vide Roche and Sanson, vol. i. p. 528. These authors inform us that M. Renauldin had two hundred and seventy-five cases during the years 1821-22-23.

decline, which is to be for some time persevered in during the convalescence. The nitrate of silver has been strongly recommended in three, five, and six grain doses in pill three times a-day *. Dr Percival gave fifteen grains of the sulphate of alum every fourth, fifth, or sixth hour; and he assures us the third dose seldom failed to alleviate the pain †.

It is proper to mention that our countryman, Dr Reynolds, has the credit of being the first who proved the powerful influence of opium over the morbid action produced in the system by lead.

ILEUS.

The attack comes on exactly like a common colic; afterwards vomiting takes place, which subsequently becomes incessant; sometimes even feculent matter is discharged by the mouth. In such cases, and even in common colic, the abdomen should be minutely examined with the hand, to ascertain whether or not a hernia exists; for I have seen two or three instances where much valuable time was lost, in consequence of mistaking a case of hernia for colic.

Pathology.

The nature of this disease, it is probable, is a paralysis of the muscular coat of a part of the intestinal tube, which leads to great dilatation; while the continuous part of the bowel is contracted, which produces a temporary obstruction. But there is much ambiguity on this subject. On dissection, the parts are found either in the state now described, without inflammation, or with considerable inflammation of the bowel itself, and of the parts in the neighbourhood. The first is more frequently met with in infancy; it is avowedly rare in adults.

Treatment.

The chief attention must be directed to prevent and subdue inflammation, and to use every means to move the bowels,

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* By Dr Robert, 5th vol. Med. Trans.

† Vide 2d vol. Ed. Med. Essays

For this purpose, the milder laxatives frequently repeated, assisted by tobacco injections, are to be had recourse to. If these fail, then we may entertain the question of bleeding, particularly if the case is not far advanced, and if there is pain or pressure. Leeches may also be applied; but still we must not lose a moment in endeavouring to procure a stool; by which it is meant, that although we may mitigate the symptoms by bleeding and leeching, yet we may rest assured that a relapse will take place in the course of an hour or two, unless the bowels are opened. Dashing cold water upon the belly has sometimes succeeded. When the gut is supposed to be obstructed, mercury in its pure metallic state has been recommended to be poured into the stomach in considerable quantity, in order to force a passage. Once I was present at a dissection, when the obstruction existed at about six inches from the termination of the rectum; and since then I have met with two cases of ileus, which were produced by a constriction of long standing in the rectum; therefore I think, in all severe cases of this sort, that a long œsophagus tube should be introduced into the rectum, and if possible, should be pushed forward into the sigmoid flexure of the colon.

This is one of those cases in which we frequently succeed in getting the bowels open after bleeding, which had previously resisted the strongest purgatives; it is also one in which opium may be advantageously combined with laxatives. Opium, certainly, generally acts by confining the bowels; but in the case now before us, and also in pure enteretic inflammations, it seems rather to increase the laxative effect of medicines than diminish it. During recovery it may be adviseable to apply counter-irritation *.

INTUS-SUSCEPTION.

Intus-susception, generally speaking, is a disease of infancy. There are the same symptoms as described in ileus, only that

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* See an invaluable paper upon this subject by Dr Abercrombie, 16th vol. Ed. Med. and Surg. Journal.

generally there is violent straining; the patient passing more or less bloody mucus with each effort, in some instances exactly resembling red currant jelly. This, like all other affections, varies very much in the symptoms as to violence; this was well proved in two cases occurring in the same family, which fell under my immediate notice. They were both infants at the breast, and boys; the disease ran its course in about the same period; but the symptoms were very violent in one case, and very slight in the other. The vomiting was severe and intractable in one, and there was scarcely any in the other. In both, a tumour was felt at the termination of thirty-six hours in the left iliac region, which gradually increased in size, till it became as large as an orange. Both children strained much at stool, and passed mucus tinged with blood. Three days was the course of the disease, although it has been known to terminate in thirty hours.

Appearances on Dissection.

We often see, on examining the bowels, partial invaginations of the small intestines. I scarcely ever open a child without finding them; but they are not to be regarded as intus-susceptions, unless the coats are thickened, with marks of inflammation upon the mucous as well as the serous coat. In the dissections of patients who die of intus-susception, it is the caput cæcum, and a portion of the ileum, which are forced up the ascending colon across the transverse colon, and sometimes down to the sigmoid flexure; and in one of the cases to which I have alluded, the caput cæcum was found in the rectum, very near to the extremity of that gut; and it appears to me that this never could have taken place unless there had been some original malformation. Upon first opening the abdomen, in both the cases the intestines looked displaced and twisted, and the caput cæcum was missed from its usual position in the iliac region.

On slitting open the intestine at the point of obstruction, we find two mucous surfaces highly inflamed, dark coloured and thickened, and covered with a considerable quantity of effusion of a red colour, intermixed with whitish matter like coagulable lymph. On laying open the intestine which is inva-

ginated, we then expose to view two serous surfaces, which are also found in a state of inflammation, with exudation and adhesion.

Treatment.

The same plan is to be had recourse to as in ileus, only this is altogether a more hopeless case; we are to be more guarded in using strong purgatives, for fear of increasing the torments of the poor little sufferers. It is said that a natural cure sometimes takes place by a spontaneous separation of the intus-suscepted portion of gut; and in every extensive collection, a preparation or two of this sort may be seen.

INTESTINAL CONCRETIONS.

Some remarkable cases of this kind are on record; but man is not nearly so liable to this complaint as some of the lower animals, as the horse, and cattle. A case is published in the eighth volume of the Edinburgh Medical Communications, by Dr Fitzgerald. The patient, a lady, suffered extreme pain in the hypogastric region, the back, and os sacrum, for eighteen months; during the last three of which she could not leave her bed, except to be put into the hot bath, which afforded only temporary relief. One day, after receiving an injection, a large, hard, calcareous ball, of an oval figure, was discharged. It exceeded in size an ordinary orange, and so solid, that it required the stroke of a hammer to break it. It weighed eight ounces and three drachms.

Sometimes there are several of these concretions, in that case they may be heard rattling upon percussing the abdomen. Many curious instances are related in the Philosophical Transactions; the late Dr Marcet wrote an essay on the chemical history and medical treatment of calculous disorders, wherein notice is also taken of several interesting cases, to which I must refer the reader, as well as to the first volume of Good's Study of Medicine.

It is alleged that the inordinate use of chalk and of magnesia in dyspeptic and calculous complaints, leads to the formation of these substances. Mason Good mentions a case of a

lady whom he had once attended, and who "laboured under a most painful constipation, till a large mass of what may be called intestinal mortar, was removed by a scoop from the rectum," p. 297. vol. 1st.

Treatment.

If the nature of the disease is discovered, large mucilaginous injections ought to be frequently administered, alternately with those of an anodyne nature, to allay irritation. Blisters and leeches may sometimes be necessary, to allay internal pain, and moderate any inflammation that may arise. If such substances can be felt through the parietes of the abdomen, as is alleged, and made to rattle together, it is surely possible to push them on daily in the course of the bowel towards the rectum. In females, I can conceive it to be very easy to break them down when they arrive in the rectum; and considerable assistance will be afforded by introducing one or two fingers into the vagina. The warm bath is not to be neglected.

PROLAPSUS ANI.

By this term is understood the protrusion of a portion of the mucous membrane of the rectum, the sphincter contracting forcibly, and producing a temporary stricture. It depends either upon a want of power on the part of the sphincter ani, or some violent irritation in the rectum, producing great straining, which, in medical language, is termed tenesmus, during which the mucous membrane is protruded. It is now much more rare than formerly, owing to the greater attention which is paid to the bowels of children, who are generally the subjects of this complaint. Formerly a pernicious custom prevailed of endeavouring to produce a stool, by making children sit upon a pot containing a little boiling water, instead of giving them physic.

Symptoms.

The protrusion always takes place when the child is bearing down at stool, or making water; it begins to cry most

violently, from the pain in the part affected. On making an examination, the mucous membrane is found of a dark red colour; the protruded portion is of various sizes, sometimes as large as a small orange. Formerly a piece of scarlet cloth was applied to it by the women, under the idea that it would be reduced by it; but now almost every nurse knows how it should be reduced.

The parts are sometimes so much relaxed as to require surgical assistance.

CHAP. VI.

INTESTINAL WORMS.

THERE are principally three kinds of Worms which infest the intestinal tube, the Lumbricus, Tenia, and Ascaris *.

1*st*, *Lumbricus*. It resembles the common earth-worm, and may exist in considerable numbers; instances are on record of upwards of fifty having been voided. Lumbrici lodge in the small intestines, and occasionally in the stomach, and are therefore frequently vomited. They often excite little uneasiness, but in some cases they create considerable constitutional suffering.

2*d*, *Tenia, or Tape Worm*. Of this genus, there are two species, the tenia solium, and tenia vulgaris. The first, as its name imports, is solitary; the second may exist in families. They generally take up their quarters in the higher parts of the intestines; for the purpose, as is supposed, of feeding on the chyle. Tape worms appear to be composed of a great number of pieces joined together by articulations. In the tenia solium these articulations are long and narrow; while in

* There is another kind of worm, which is rare—the Trichuris; but of which I shall not treat, being more an object for the natural historian. Another species, never before described, has been lately discovered in my collection, by Captain Brown, an ingenious naturalist.

the other kind, they are short and broad. The solitary tape worm has been known to measure between thirty and forty feet; and one extraordinary worm is mentioned by Dr Sibbargaarde of Copenhagen, which measured thirty-eight yards. The tenia solium measures generally from three to twelve feet.

3*d*, *Ascarides* generally lodge in the rectum, enveloped in mucus; they are the smallest, being only like threads, from an eighth to a quarter and half an inch in length.

Worms chiefly exist in children and sickly adults, and generally depend on some diseased condition of the secretions in the alimentary canal: I believe the inhabitants of Great Britain suffer less from them than any other nation.

Worms frequently produce emaciation, swelled and tense abdomen, gnawing and slight burning pain in the stomach and bowels; irregular appetite; pale, sickly countenance; foul tongue; fetid breath; irritation and inflammation of the nostrils, occasioning great itching and desire to pick the nose; occasional feverishness, particularly at night, producing restlessness and want of sleep. But none of these symptoms, nor all of them conjoined, point out the positive existence of worms, because they may be produced by any irritation or sub-acute inflammation in the mucous membrane; and it is too much the custom for medical men to conclude that a child has worms, if it is dull, looks pale, and is constantly observed with its fingers in the nose. Besides these symptoms, however, worms occasionally produce violent colicky affections, with vomiting and purging, sometimes of blood; more rarely, head symptoms, and even epileptic convulsions, take place. Children who are troubled with worms, often awake suddenly, screaming; and frequently are observed to grind their teeth.

Treatment.

The first thing to be done, is to endeavour to repair the digestive function; and at the same time, we must institute an exterminating war against such filthy intruders, by means of a class of medicines called anthelmintics. It is curious, however, that the remedy which appears to succeed in one or two cases, will disappoint our expectations in a number of

others. Anthelmintics naturally divide themselves into two classes, one which operates mechanically, namely, ordinary purgatives, common oils, sulphur, sea-salt, tin-filings, cowhage; another, which has a peculiar poisonous effect on the animal, as spirit of turpentine, hellebore, male fern, tobacco, rue; calomel, and other mercurial preparations. Of all these, spirit of turpentine, calomel, jalap, and the cowhage, have been most successful. It deserves also to be mentioned, that the spirit of turpentine, in doses of from one to two ounces, is the only remedy which has hitherto been found generally successful in destroying the tenia. When turpentine is given by the mouth, care should be taken to have the bowels previously well opened, so that it may not be detained in the intestines.

CHAP. VII.

INFLAMMATORY AFFECTIONS OF THE ORGANS CONTAINED WITHIN THE CAVITY OF THE ABDOMEN.

GENERAL REMARKS.

INFLAMMATIONS of the viscera have been distinguished, since the time of Boerhaave, by anatomical terms, derived from the name of the tissue or organ affected, with the addition of the Greek term, *itis;* as, Gastritis, Enteritis, Peritonitis, Arachnitis, &c.

In inflammatory disorders, it is an error to suppose that the constitution is always disturbed in proportion to the importance of the part affected, and the nature and extent of the diseased action. If the organ is a vital one, the disease is certainly attended with more danger, than if the inflammation attacked an ordinary muscle or cellular substance to the same extent; and the disease is much more rapid in its progress; but there is often more pain and a higher fever when the inflammation is situated in the latter tissues, than in the brain, lungs, &c.

The constitutional suffering which happens when vital organs are affected with inflammation, is attempted to be explained by the term sympathy; it is said in medical language, the organs sympathize with each other. Thus, Dr Good observes at page 384, vol. II. "When inflammation is seated in the heart, its action becomes extremely agitated and irregular. When in the lungs, the heart, *possibly from sympathy*, does not seem to allow a free diastole."

It would afford me much real satisfaction, if the word sympathy were discarded from medical writings, as I conceive it would be a great step gained in the advancement of pathology. It is one of those vague terms employed in medicine, to express a great deal more than any one actually knows, but which explains nothing; and I have seen it highly injurious in practice,—thus, in inflammation of the stomach and bowels, I have seen the most deadly head-symptoms lighted up, which were not treated, because it was supposed the affection of the brain was only *sympathetic*. I have seen the same thing happen in fevers, gout, rheumatism, &c. The word sympathy means, strictly speaking, fellow feeling or suffering, and so far the expression is correct, because, as has already been explained in a former part of this work, diminished action in one organ leads to increased action in another, and any thing going wrong with one important function, embarrasses all the others. Here it will be remarked, that the organs secondarily affected are diseased, in as much as they are supplied with too little, or with too much blood; or, if the organ affected be excretory, something deleterious is retained in the blood, which poisons to a certain extent the stream of life, producing embarrassment in all other organs, although one may shew it more than another. Now all this shews fellow suffering,—a tendency which one organ has to sympathize with another. It is to be lamented, however, that this expression is too often used in medicine, in the same sense as it is employed in common conversation.

When inflammation is seated in the lungs, the heart actually does suffer, from two causes; first, because the function of respiration is impeded, and the changes produced on the blood in the lungs is not properly effected; and secondly, because the circulation through the lungs is obstructed. This is certainly accounting for the affection of the heart, better than by stating that it is "*possibly from sympathy.*" The same thing happens to the lungs, when the heart is primarily affected; there is dyspnœa and cough, not from sympathy in its ordinary acceptation, but from an increased or diminished supply of arterial blood; and also, by obstruction in the circulation. It may be thought by some, that this statement is

quite unnecessary; but it is made under a strong sense of its importance, as I often have to witness the baneful effects of the term in actual practice; there could, however, be no objection to the term, if employed in a strict pathological sense.

There is another term, which those who are young in the profession, must be careful in receiving,—it is the word "debility." It has already been shewn, that oppression and obstructed action are generally confounded with debility; and I shall take the liberty to make a few remarks with respect to this term, as applied to the system when labouring under inflammation.

Dr Mason Good, in noticing inflammation of vital organs, observes at the page last quoted, "The *debility* commences early, because the inflammation itself is immediately interfering with the actions essential to life." The term debility is usually employed in such cases to denote oppression, prostration of strength, inability to allow of loco-motion; but if the inflammation is quickly removed from any organ by bold measures, the oppression ceases to be felt, and the strength is restored by remedies decidedly debilitating. This must ever be kept in recollection in treating inflammations in the first and second stages; otherwise, the term will be apt to induce young practitioners to give bark, wine, and animal food, in cases in which they ought to bleed.

It must be recollected that inflammations are not always acute, more frequently perhaps they occur in a sub-acute and chronic form.

The term acute inflammation, is employed to express the highest degree of this diseased action, which arises suddenly, gallops through its course with rapidity, and if not properly treated, terminates in a few days, by altering the structure of the part affected so much, as to render it incapable of supporting life.

The term sub-acute inflammation, is employed to denote a milder degree of inflammation than the former, which arises more insidiously, is less severe, and if left to itself, does not destroy the structure of the part affected till the second or third week.

In both these cases, we have the combination of symptoms

denominated fever, which is higher, generally speaking, in the former than the latter.

The term chronic inflammation, is employed to express a diseased state which follows an acute inflammation that has been so far subdued, as we see sometimes in the tunica conjunctiva of the eye. This term is also employed to signify an inflammation which begins and advances very slowly and irregularly. The patient passes restless nights, with thirst, and a dry burning sensation of the hands and feet, which, through the course of the day perhaps, can scarcely be kept in comfortable heat; during the day he appears little disturbed; although he is always complaining, yet there is no severe general commotion; he is able to sit up, to take exercise, and even for some time to go through his ordinary duties. His restless nights are too generally attributed to indigestion, proceeding from something which he has eaten or drank,—to an irregular state of the bowels,—want of exercise, or to something which had affected his mind; when perhaps the substance of the brain itself is undergoing slow destruction. In such cases, the common routine practitioner will be found prescribing his tonics, diaphoretics, diuretics, or blue pill, always treating some symptom, the actual disease being hid by an impenetrable cloud from his senses. At length the structure of the part becomes more and more destroyed, till all the symptoms called hectic are fairly established, or the patient becomes comatose.

These observations naturally lead me to notice other points in pathology. It is surprising to find how completely a vital organ may be altered in structure, without producing external signs or symptoms of corresponding violence, provided the diseased action has gone on very slowly. Another circumstance to be attended to is, that one individual, from peculiarity of constitution, will be destroyed by the tenth part of an organic lesion, which a great many others may survive for years, never certainly being entirely well, but able to transact their ordinary business.

The consideration of these circumstances, ought to induce us, in our treatment of diseases, to go on steadily, guided as far

as possible by the pathological condition of the body at the time, without reference to accidental symptoms.

When treating of the congestive form of fevers, it was mentioned that inflammatory action might go on concealed under severe congestions. The same observations are equally applicable to pure inflammatory diseases.

ENTERITIC INFLAMMATIONS.

Under this title I shall treat, 1*st*, of Peritonitis. 2*dly*, Of Inflammation of the mucous membrane of the stomach. 3*dly*, Of the Bowels, which will include diarrhœa, the bowel complaints of children, tabes mesenterica, dysentery, and cholera. 4*thly*, Inflammation of the muscular and cellular tissues. 5*thly*, Schirrus of the stomach and intestines.

Peritonitis.

I shall, in the *first* place, treat of inflammation of the peritoneum in the ordinary state of the system; 2*dly*, peritonitis after delivery; and *lastly*, of the chronic form of the disease.

Cullen, by dividing this disease into three varieties, has been guilty of a great error, because no one can tell whether it is the peritoneum lining the cavity of the abdomen, or that covering the omentum or mesentery, which is inflamed. Although he insists much on the propriety of this division, yet he observes, "it is not proposed, however, to treat of them here, because it is very difficult to say by what means they are always to be known; and further, because when known, they do not require any remedies besides those of inflammation in general."

Although peritonitis may take place most extensively, even to a fatal termination, without affecting the subjacent tissues,

yet it is rare to see a case of inflammation of the muscular coat of the intestines terminate fatally, without finding the peritoneum more or less inflamed also.

Phenomena.

It makes its attack, like other acute affections, with a rigor or chilliness, which marks an irregular distribution of the blood; occasionally, however, as in other cases, the disease makes its approach in the most insidious manner.

The pain differs very much in its extent and severity, being sometimes so slight as scarcely to be complained of throughout the whole course of the disease; in others, so severe that the patient is unable to cough or to turn himself, and he even complains of the weight of the bed-clothes. The pain is described as being rather acute tenderness than pain; it is sometimes so confined in extent, that the tips of the fingers can cover the part affected. The uneasiness sometimes commences in one part of the abdomen, sometimes in another. Generally it is first felt in one of the hypogastric regions; it does not, however, continue fixed and confined to one spot, but frequently spreads quickly over the whole abdomen. Before the fatal event takes place, all uneasiness suddenly subsides, which is apt to impose upon the inexperienced; but the pain on other occasions continues to the last, and this is produced, I apprehend, by the inflammation continuing to spread. Tumefaction and tension of the abdomen occur early; in the first stage, it is produced by tympanitis, but late in the disease, the effusion produces distention. The pulse is not to be depended upon, as it varies in different cases; sometimes it is full, strong, and quick, beating 120 or 130 in the minute, sometimes it is strong and slow, sometimes weak and quick, and very often it beats at the natural standard; but towards the fatal termination it becomes rapid, weak, and intermitting. Vomiting is only an occasional symptom in peritonitis. The bowels are in general easily moved, drastic medicines are therefore not necessary. Thirst is a very general symptom in the pure inflammatory disease, but when the system is much oppressed by congestion, it is not much complained of. The tongue at

first, moist and loaded with a white fur, soon becomes dry and brown in the centre, and frequently it is observed to be very red at the tip and edges. The breathing is soon affected, if the inflammation is extensive, from the pain which the motion of the diaphragm produces upon the tender peritoneum, as well as from the disordered state of the circulation. In the latter stage, however, the breathing becomes laborious, not only from the extensive effusion in the belly, and the increased disorder in the circulation, but frequently also from the pleura partaking of the inflammation. The head, in most cases of acute and deadly inflammations of other parts, cannot escape embarrassment in its functions; therefore, we have almost always headache, if minute inquiry is made, and occasionally delirium. When the peritoneal coat of the stomach is inflamed, the symptoms appear to be much more violent than when it affects any other part; the pain is more severe, the vomiting incessant and intractable; the features collapsed; the pulse small, and the powers of life sink rapidly;—this description will be found to correspond to that of the gastritis of authors.

Causes.

Cold and fatigue, producing irregular determinations of blood, and a bad state of bowels, occasionally produce this disease, as well as contusions and wounds; sometimes it follows surgical operations, as lithotomy and strangulated hernia.

Pathology.

Until lately this was not understood. Cullen was ignorant of it, and so was Dr Gregory, I believe, to the latest period of his life. Many people of the present day, cannot fancy how it comes to pass that there is so much effusion with so little vascularity, but there is now no doubt that the effusion is produced by inflammation of the peritoneum itself.

In addition to the observations already made on the effects of inflammation on serous membranes, at page 20, &c. of this work, and those which will also be found at page 218, I may now remark, that the absence of vascularity is no proof of

the non-existence of inflammation, and pathologists rather trust to the well known results of that action, which have also been established by experiment. Peritonitis was produced in dogs, which were then killed, and the vascularity, if recent, disappeared in the act of death *.

Treatment.

Bleeding, both general and topical, is to be had recourse to; in very slight cases we may trust to local bleeding by leeches, but when the inflammation is severe, the lancet should be used to such an extent as the nature of the case demands, so as to make a decided impression upon the disease, and upon the system. It is quite dreadful to know, that physicians are still in the habit of ordering the precise quantity of twelve or sixteen ounces of blood in all cases, whether the disease is slight or severe; the patient robust or weakly; at the beginning of the disease, as well as at any time during its progress. In all cases, the operator should be left to his own judgment as to the quantity, because he alone can judge of the effects, unless the physician chooses to attend himself; more than two or three hours should not elapse between the bleeding and the next visit, when it is to be determined whether the operation is to be repeated, or leeches applied. Perhaps it may not be found necessary to have recourse to either the one or the other, but we are nevertheless still to be on the watch. Laxatives are to be frequently repeated, assisted by large unstimulating tepid injections. There is no excuse in this disease for giving drastic purgatives, because the bowels are in general not difficult to be moved; and if they should be found obstinate, two grains of calomel, and six of rhubarb, repeated every three hours, will produce more satisfactory stools, with less danger of producing irritation, than five grains of calomel and a scruple of jalap. As soon as the bowels are opened, an opiate may be given if there is any restlessness. Fomentations with very hot cloths are often serviceable in mitigating the pain, but

* Vide Archives Genérales for December 1823, and January 1824.

it is not yet a decided point whether they are more or less beneficial than cold applications. Blisters are not to be had recourse to till late in the disease; and when they are thought necessary in serious cases, the abdomen should be completely covered.

Many practitioners have great faith in digitalis in such cases, as a counter-stimulant, in doses of ten, fifteen, or twenty drops of the tincture, repeated four or six times in the twenty-four hours; but although I have seen it tried in many acute cases of peritonitis, it has never operated beneficially, and no confidence can be placed in any remedy in such an acute disease, which requires that we should wait twenty or thirty hours for its effects in controlling the circulation. If a remedy of this class is wanted, we possess a far better one in antimony; and better still, in acute affections of the bowels, in tobacco, which is to be administered by injection.

If the patient is affected with distention of the abdomen from tympanitis, we have an admirable remedy in turpentine by injection, in the proportion of half an ounce, or an ounce, in eight or ten ounces of gruel, or it may be put into the tobacco injection. The regimen is to be strictly antiphlogistic.

For many excellent remarks, the reader is referred to Dr Abercrombie's paper on Peritonitis, in the 16th vol. of the Ed. Med. and Surg. Journal.

PUERPERAL PERITONITIS, VULGARLY CALLED PUERPERAL FEVER.

The nature of this disease is inflammation, and its seat the peritoneum, so that it is exactly the same as the last affection treated of, but modified by the peculiar condition of the woman, and the nature of the prevailing epidemic.

Phenomena.

There are two great varieties in puerperal peritonitis, the pure inflammatory and the congestive; and I shall hereafter explain the reasons why the latter more frequently occurs in this, than in the ordinary condition of the system.

It is not necessary that I should enter into a detail of all the symptoms, because they are the same as those already described in common peritonitis. It will be sufficient to notice some of the peculiar symptoms which Dr Hamilton and other symptomatical physicians call pathognomonic, or, in other language, symptoms which are present only when the disease is present, and absent when the disease does not exist. These are the pain, the state of the pulse, tympanitic distention of the abdomen, pain in the forehead, and the particular condition of the discharge which takes place after delivery, called the lochial discharge.

Mr Burns, as well as Dr Hamilton, has endeavoured to make it appear, that in peritonitis the pain is very severe; whereas in what they choose to call puerperal fever, the pain in the belly is slight, or, to use the words of Mr Burns, "abdominal pain is not the most prominent symptom." Dr Hamilton is exceedingly angry at a statement made by me in my work on "Puerperal Fever," that in his cases the pain in the belly was very acute, which he has been at much pains to deny in a letter printed in a celebrated pamphlet, which it has since been necessary to suppress; but that the Doctor has been guilty of a subterfuge, is easily proved, by looking back at his own account of the symptoms of the disease, in the old editions of his work. In the edition 1813, page 202, will be found the following passage: "In many cases the pain in the belly is such, that the weight of the bedclothes proves intolerable." But even allowing that the pain is often sub-acute, and not much complained of as a prominent symptom, it is no more than we frequently meet with in peritonitis in the ordinary state of the system. Dr Abercrombie, in giving an account of the pain in common peritonitis, says, "and in some cases, it is little complained of, except when pressure is applied, being rather acute tenderness than actual pain."

Much stress is laid upon the pulse, by these gentlemen, in the form of the disease under consideration. They try to make it appear, that in common peritonitis it is always "frequent, small, and sharp," whereas in this disease it is fuller,

but soon becomes feeble. It will only be necessary to quote a short passage from Dr Abercrombie's paper, above alluded to, to shew the absurdity of this distinction. "The pulse (says he) is frequently little affected, especially in the early stages. It may be from 80 to 90, or 96, but is sometimes scarcely above the natural standard."

Early tumefaction of the abdomen is supposed to be peculiar to puerperal peritonitis; but as no professional man, who has been in the habit of treating inflammation in the abdomen, whose opinion is of any value, will again hazard such an assertion, I shall pass it over without further notice, as also the pain in the forehead.

Lochial Discharge.—All the authors who have written upon this subject, including Mr Burns himself, state that the lochial discharge is variable,—that it sometimes flows as in ordinary cases, in some it is diminished, and in others suppressed. Dr James Hamilton jun. maintains that it never ceases in the true puerperal fever; and that it is "*one striking mark of distinction between diseases which resemble each other in the prominent characters of fever and pain in the belly.*" Thus endeavouring to draw pathological distinctions from one symptom, confounding cause and effect.

Diarrhœa sometimes occurs in the course of this disease, and is always to be regarded with anxiety. If the secretion of milk has taken place, it almost always recedes, and the breasts become flaccid; but the disease generally makes its attack before the secretion of milk commences, in which case it does not take place till two or three days after it is subdued.

Appearances on Dissection.

Dr Abercrombie's account of the appearances found in peritonitis, occurring in the ordinary state of the system, is as follows: "On dissection we find uniformly effusion of coagulable lymph, in some cases very extensive; and frequently effusion of a turbid or puriform fluid, sometimes in considerable quantity. Gangrene is rare, and as far as my observation extends,

never occurs as the prominent appearance, it being, when it does occur, slight and partial, and always accompanied by extensive deposition of coagulable lymph *."

The following statement of the appearances found in the cases which were treated by Dr James Hamilton jun. in the Lying-in Hospital, was published in the inaugural dissertation of his pupil Dr Torrance, and acknowledged by Dr Hamilton to be correct.

" We found (says Dr Torrance) appearances similar to those observed by Hulme and Leake in the London hospitals. On cutting into the abdomen, fetid gas sometimes issued from it. A fluid was always found in the cavity of the peritoneum. When the effusion was in small quantity it resembled milk, and joined the intestines together like glue; but when in a large quantity, it had the appearance of whey. In consequence of this, the adhesions were not so strong. We found small, whitish portions of this matter in the folds of the intestines, which, when stirred, gave an appearance of milk to the effused fluid. The peritoneal coat of the intestines had lost its usual pellucid appearance, had become much hardened, and the ramifications of the red vessels were conspicuous. These appearances of inflammation, however, were not such as they should have been from such an effusion of fluid into the abdomen. The peritoneal coat of the stomach seemed always sound. The muscular and cellular coats of the intestines, were sometimes affected by an effusion between them. The villous coat was almost always natural. About four or five pounds of a fluid resembling coffee, was found in one or other of those affected.

" The omentum in some cases firmly adhered to the intestines, and its substance was so much affected, that it was torn in many places before it could be separated from them; but it never seemed mortified, nor was it dissolved into a purulent matter, as Leake and Hulme say they have seen it. The internal surface of the uterus was sound, and never affected with inflammation. Suppuration of the ovaria was sometimes manifest. In two or three cases, it seemed that the pleura

* Edinburgh Medical and Surgical Journal, Vol. XVI.

had been involved in the inflammation, viz. by effusion, and other signs sufficiently marked."

Pathology.

1*st*, The peritoneum is the tissue affected by inflammation in this disease, which extends itself without any preference throughout the whole extent of the membrane, without attacking one portion more than another, except that part of the peritoneum which forms the broad ligaments, in which place, it is probable, the disease first commences. Nevertheless the inflammation does not always appear to be general, being sometimes confined to particular spots.

2*dly*, The effused fluid found in the abdomen of women who have died of peritonitis, has nothing remarkable in it; it resembles the same matter found in peritonitis in men, and in the thorax of those who die of pleurisies. It varies in consistence and colour in all these cases, but it is generally a white or reddish serous matter, containing flakes of albumen, more or less abundant, according to the intensity of the disease; it sometimes looks like pus.

3*dly*, The substance of the uterus has rarely been found diseased in any other degree than being sometimes large and flabby.

4*thly*, If a patient die in the first few days of peritonitis, we often find little vascularity, particularly if much blood has been drawn, although we are certain, from the previous symptoms, that inflammation had existed. If the patient survive longer, however, then we shall see the sero-purulent effusion. If the patient live still longer, the quantity of effusion is increased, and masses of coagulable lymph will be found glueing the intestines very slightly together. If the patient live still longer, the intestines will be matted together, and false membrane will be found covering the liver, spleen, and uterus, and the peritoneum itself will then be seen very vascular, and much thickened.

5*thly*, The pleura is also frequently found inflamed in this disease, as indicated by a similar sero-purulent effusion, and there is sometimes marks of inflammation and effusion in the brain.

6*thly*, This disease is more rapid in its course and fatal in its termination than ordinary peritonitis, from the peculiar condition in which a woman is left after parturition. In the *first* place, there has been an increasing determination of blood towards the uterine region during the previous nine months; in the *second* place, an increase of nervous irritability. So that the balance of the circulation is left at this period in a very unsettled state, which is readily upset upon the application of any of the usual causes; and when upset, the blood naturally takes its course towards the abdomen.

These are at least some of the reasons for the venous congestion which takes place in many cases, in a greater or less degree, particularly in women who have been worn out by breeding, or who have been debilitated by previous disease, or insufficient food and clothing. In these cases, the heart and other vital organs are so much oppressed, that they cannot create re-action, or the system is too weak to do so. In one set of cases, speedy death takes place, the patient sinking without any marks of local disease, unless it can be said to be indicated by vomiting and diarrhœa, with some confusion of intellect. In another set, although considerable congestion has taken place, it is not to such an extent as to destroy the patient; inflammation attacks the peritoneum under a suppressed re-action, and it goes on with a surface which is almost bloodless; therefore there is little or no heat of skin; the pulse is small and weak; the expression of the countenance ghastly; and the pain in the abdomen sub-acute. There are various shades and degrees of this complaint, according to the various combinations of these two conditions of the system.

There are three other causes which enable us to account for the rapid march and fatal termination of puerperal peritonitis. The *first* which I shall mention is the occurrence of inflammation of that part of the peritoneum which covers the stomach, giving rise to those most violent symptoms which are described by authors under the title of gastritis. In a great majority of the fatal cases which have fallen under my notice, the peritoneum covering the stomach was highly inflamed; in several cases the whole stomach was in a softened state, and in all

these cases there were most violent gastric symptoms. In the *second* place, inflammation of the peritoneum frequently takes place before delivery; sometimes as the original disease, and occasionally from the extension of inflammation and ulceration from the mucous membrane. The natural pains conceal the disease during parturition; afterwards the pain from inflammation is mistaken for after pains; and before alarm is taken, the patient is generally lost. I have seen many examples of this; and since the publication of my Treatise, I have been able to anticipate what was to follow delivery, and have only lost one patient out of between twenty and thirty who had the disease. In the *third* place, something may be fairly attributed to the nature of the prevailing epidemic.

Treatment of Puerperal Peritonitis.

The only differences which exist between the treatment of peritonitis, in the ordinary condition of the system, and that which is now under consideration, proceed from the two following circumstances: That we have a more severe and extensive inflammation to subdue; and that it is more frequently combined with venous congestion, which suppresses the inflammation, and deceives the practitioner. If peritonitis, in the puerperal state, attack a woman during the first two or three days after delivery, and is neglected for twelve hours, nay, in many instances, for six, the means we can employ will, in all probability, be unavailing. It is for this reason that I would rather treat the disease in an hospital than in any other situation. A physician, under such circumstances, requires almost to live with his patient, at least he should not be away from her bed-side for more than two hours at a time; nor will this be a great hardship, should he even have five or six such patients on his hands at a time,—the battle is to be won or lost in the course of twenty-four hours: but should it be sixty, a medical man must be always prepared to sacrifice his interest, and to disregard bodily fatigue, when the life of a fellow-creature is at stake. If he will rest upon a bed of roses, scarcely a patient will be saved affected with this disease; and if Dr Hamilton visited his poor patients in the Lying-in Hospital only twice a-day, it so far enables the profes-

sion to account for Dr Torrance's conclusion with regard to the practice pursued. " Copious bleeding therefore, however much praised by Gordon, Armstrong, and Hey, in private practice, has always, on this recent occasion, deceived the hopes of the physicians of the Lying-in Hospital of Edinburgh, and has been from necessity laid aside." Dr Torrance also says enough in one paragraph to shew the profession the puny manner in which the bleedings were executed,—that they were adopted " *without any alleviation of the symptoms;*" and the reader will be astonished when he is told the reason why Dr Hamilton appears to have under-bled, particularly after perusing the history of the dissections of these very cases which has been given above. He conceives that the effusion of coagulable lymph, and the glueing together of the bowels, are produced by the bleeding; but he shall speak for himself. " It appeared to me, (says he,) that the effusion into the abdomen was accelerated by the bleeding."

Upon further experience, I can speak more confidently of the advantage of applying leeches. Many cases could be quoted, where one hundred, one hundred and fifty, two hundred, and two in which two hundred and forty were applied, first and last. They were very hopeless cases, and not only recovered, but the ladies are now in the enjoyment of perfect health and strength. Leeches are to be applied in numbers according to the age and constitution of the patient, and the period of the disease; but it must be mentioned, that some constitutions cannot bear their application. Whenever we are in doubt, therefore, it is better to apply fewer than we would otherwise do, and repeat them according to circumstances. An ordinary constitution can well bear the bleeding from two dozen, and plethoric individuals from 50 to 100 at one application. When we think it time to check the oozing of blood, we should see it done. In one case, of rather a delicate lady who was labouring under peritonitis, twenty leeches were applied to the abdomen. Her husband was a medical man, and he ordered the nurse to stop the bleeding; she told him it had already stopped, and he went out on necessary business. On his return, he found his wife in the utmost state of exhaustion; upon examining her abdomen, he found only one orifice bleeding,

but the blood was coming *per saltum*. One of the leeches had penetrated a small branch of an artery. Stimulants were necessary, and she recovered from the state of syncope. This case is merely mentioned as a warning to young practitioners.

In the congestive cases, bleeding is to be had recourse to if called early, and if the pulse still possesses sufficient strength. Stimulants may be necessary at the same time, and I have already shewn that stimulating and bleeding in such cases are not inconsistent with good pathology. The warm bath, stimulating frictions, and also large blisters, are to be applied; and subsequently calomel and opium may be used, together with the application of leeches. Before concluding this subject, the proportions of deaths may be stated under each system, to enable the reader to draw his own conclusions.

The celebrated Dr William Hunter saved one patient only out of thirty-two; his practice became fixed to give a good wine glass full of brandy at the commencement of the disease.

Dr Hulme, who considered the disease partly of a putrid nature, and who employed bleeding in small quantities, and only as a secondary remedy, lost almost every patient.

Dr Leake, who recommended bleeding in small quantities, and at long intervals, and who gave his patients bark, beef tea, and cordials, to prevent putridity, lost thirteen out of nineteen patients in one season.

Dr Gordon lost twenty-three out of twenty-seven cases, when he adopted a weak, vacillating practice; but afterwards he used early and large bleedings, and out of fifty he only lost five.

Mr Hey of Leeds saved only three out of thirteen cases before he began to bleed; but afterwards he was led, by sad experience, to bleed boldly and early, and he only lost two out of thirty-six patients.

Dr Armstrong, who seems to have profited early in life by the experience of others, assures us he only lost five out of forty-three.

On perusing this statement, the reader will perceive the dilemma in which Dr Hamilton is placed, and will perhaps say in his own mind, that there is no hole through which he can

escape; but alas! he does not know the worthy and ingenious Doctor: he will always escape, but always in a manner peculiar to himself. The reader will say, he cannot now assert that their cases could not be cases of puerperal fever, because they had the lochia suppressed. It is indeed to be hoped he is not now guilty of such a blunder. What will the reader say, then, if Dr Hamilton were to try to escape from the dilemma, by such an extravagant statement as the following? I hold my fatal cases, in which bleeding failed in curing the disease, to be more certain proofs of the inefficacy of bleeding, than the production of forty-five cases where the patients recovered when bleeding had been used; for the cases might not be of puerperal fever at all, as had really happened in those cases cited by Drs Gordon and Armstrong, and Mr Hey of Leeds, where theirs terminated favourably under the lancet; or if they were really cases of the disease, I will maintain that not the bleeding, but a natural change in the constitution, going on before that remedy had been employed, had effected the cure. My fatal cases afforded positive proof; the forty-five favourable cases afforded only negative.—The reader may here say, it is impossible that any Professor could make such a statement; my answer to that is, that I shall be glad to be afforded an opportunity, upon Dr Hamilton's authority, of denying that he could ever have committed such an outrage upon common sense.

CHRONIC PERITONITIS.

Sometimes this form of disease succeeds to previously acute action in the tissue itself; sometimes it is occasioned by the extension of ulceration from the mucous coat of the bowels; and occasionally it is itself the primary disease, in which case it is often very insidious in its attack and progress.

Symptoms.—Pains are occasionally felt in various parts of

the abdomen, with a sense of weight or oppression; the pains come on in paroxysms, which are sometimes very severe, at other times a pricking sensation only is felt; in some cases, pain is not a prominent symptom; the belly is tumid, with occasional tightness, while the rest of the body emaciates; the strength declines slowly; fever is often present, that is to say, the pulse is quick, of variable strength and fulness; there are thirst; restlessness. The tongue is in various states, either loaded, or very red, or both; constipation is a usual attendant for some time, but subsequently diarrhœa takes place; the stools have generally a natural appearance. The patient also experiences a sense of increased weight and uneasiness in the abdomen after a meal. Chronic peritonitis runs its course to a fatal termination in various periods; I have known it of eighteen months standing, and sometimes the patient is destroyed in five weeks. In the last stage the symptoms become aggravated; the features shrink; emaciation takes place to the greatest possible extent; and sometimes death appears to be owing to the patient's being worn out, or from an attack of constipation resembling all the symptoms of ileus, or from the supervention of acute inflammation, perhaps in the cavity of the thorax.

It is in general a fatal disease, but I have seen wonderful recoveries, if one may be allowed to judge from the appearances of thickening of the peritoneum, and extensive adhesions; the individuals having survived the attack for a number of years, enjoying a tolerable share of health, and dying at last from the effects of other diseases.

Chronic peritonitis is sometimes mistaken for other diseases, chiefly for dropsy.

Causes.—It has already been stated, that this disease sometimes follows an acute attack, and as the consequence of it; from the extension of ulceration from the mucous coat of the bowels; hence it sometimes occurs as one of the sequelæ of fever, diarrhœa,

dysentery; and it is occasionally caused by external violence. It may also be produced among the children of the poor by insufficient clothing, the use of unwholesome food, as well as by the continual irritation from worms. In women it sometimes occurs at that period of life when the menstrual discharge ceases. It is also often the consequence of irritation, produced by tumours growing from different parts of the uterine system, and by extra-uterine pregnancies.

Appearances on Dissection.—The whole intestines are sometimes matted into one solid mass, involving the liver, spleen, and other parts; generally, however, we only find the intestines and omentum in that condition. Occasionally it is seen to affect only the liver and parts in its neighbourhood, which are covered with a false membrane that can be readily peeled off, leaving the peritoneal coat attached to the organ. The disease may be confined to the contents of the pelvis, as is sometimes seen in scirrhous affections of the rectum and uterus, and diseases of the ovaria. Occasionally the peritoneum is thickened every where without adhesions, but this is more frequently observed when there is an effusion of a serous fluid into the cavity of the abdomen, and particularly if it exists in any quantity. Sometimes the effusion looks like pus. The colour of the peritoneum varies exceedingly; it is sometimes almost as red as if painted with vermillion, with large red vessels ramifying in different directions; sometimes the redness is confined to particular spots, as if produced by ecchymosis, in other places it is yellow, blue, purple, slate-coloured, black; but it appears doubtful to me, whether some of the colouration may not be produced by *post-mortem* changes. In some rare instances, the peritoneum appears smooth; in general it is rough from irregular elevations; ragged, which last appearance is sometimes, though rarely, produced by ulceration, most frequently it is occasioned by the rough state of the membrane itself, and by very fine long irregular bands forming adhesions. On some occasions, the peritoneum presents partial fungosities, slightly elevated, extending in patches of irregular shapes, and of a red colour, looking very much like a coagulated bloody effusion. Chronic inflammatory action in the peritoneal coat,

is a frequent cause of tubercular formation, hence tubercles are often found in every part; thus, I have seen them in the peritoneum lining the general cavity, covering the intestines, stomach, liver, and spleen; I have seen them in the peritoneum which forms the omentum, mesentery, meso-colon. Sometimes the mesenteric glands are also affected, but I have never seen them so under any circumstances, without finding the corresponding part of the mucous membrane of the intestine inflamed, more generally extensively ulcerated; so that I apprehend the too sweeping term scrofula, has been applied to these formations upon erroneous pathological views. The tuberculated state of the peritoneum, generally takes place after the lungs have been attacked with the same disease; sometimes, most certainly, from chronic inflammation of the peritoneum, particularly when it succeeds to external violence, and when the lungs are sound. The tubercles on the peritoneum are sometimes of the miliary kind, sometimes hard, and of various sizes up to that of an orange, occasionally resembling masses of coagulated blood; at other times having very much the character of the diseased structure termed medullary sarcoma, and they exist either singly or in groups hanging like bunches of fruit.

This description is drawn from cases and dissections which have fallen under my own observation; and my museum and portfolio contain preparations and representations of all the morbid appearances above stated, which were capable of being so preserved. The reader, however, is referred, for further information, to the work of Dr Baron, who is well known to the profession as a useful and zealous cultivator of pathology.

Treatment.—The disease is frequently a hopeless one, before medical advice is sought; but if the case should be ever so hopeless, it is the duty of a physician to use his best exertions up to the very period of death, as remarkable recoveries have been known to take place; indeed, I have remarked, that in proportion as pathology has advanced, the old practice of "giving up" patients has declined. We can almost always mitigate the violence of the symptoms, and place

the patient in a comparatively comfortable situation, when there can be no hope either of curing the disease, or of prolonging life. The question of general bleeding can rarely be entertained in such cases, yet I have met with some, in which it was loudly called for, and was productive of benefit. The frequent application of leeches, whenever a patient complains of pain, is of great service, together with counter-irritation, produced either by stimulating embrocations, tartar emetic ointment, or common blisters. Hot applications to the abdomen may be useful, together with the frequent employment of the warm bath. Assiduous attention to the bowels, however, forms almost the most essential part of the treatment; this is to be done, not by strong purgatives, but by very gentle laxatives, united with hyosciamus, and large tepid unstimulating injections, used regularly once, sometimes twice a-day. I have seen opiates serviceable, but their use is often contra-indicated by constipation. The employment of drastic purgatives in these cases cannot be defended, and I have known, within my own experience, three cases in which they produced fatal attacks of acute peritonitis. It is almost unnecessary to add, the importance of attention to the diet, which should be nourishing, but bland and unstimulating, as well as easy of digestion. Ass milk once or twice a-day, is therefore to be employed, but patients should avoid distending the stomach much, and taking any article which they know from experience will produce flatulency, as the violent paroxysms of pain, which have been mentioned in the description of the symptoms, may be frequently traced to the presence of flatus. The knowledge of this will therefore lead us during such a paroxysm to give a carminative, but what will answer better, a turpentine injection, containing a dessert spoonful of that substance. Exercise should be avoided, if motion produces even the slightest uneasiness.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE STOMACH AND BOWELS.

Before treating of the different diseases depending upon morbid states of the mucous membrane of the stomach and

bowels, it will be of advantage to the student, to give a sketch of the different changes produced by inflammation in that tissue.

It is a point of the first importance, to determine the condition of the mucous membrane in a state of health, in order to enable us to ascertain its diseased states. It is admitted, I believe, by every one, that the mucous membrane of the stomach and bowels presents a whitish appearance, with a slight tint of rose colour, in the most healthy state in which we see it after death; that although a blood-vessel may be seen here and there, yet they are not to be observed arborescing in great numbers, nor do we see any discoloured patches, unless there has been some great impediment in the circulation, or they have been produced by a natural change towards decay. Indeed, it is to be apprehended that many of the tints described by French pathologists, may be attributed to this last cause. It is stated, that the stomach becomes more vascular, and of a redder colour, during the act of digestion than at any other period, which appears to be very probable.

On opening the stomach of an individual who has died from some other disease, the mucous membrane will be found slightly coated with mucus, which is not difficult to remove; and if the body has been opened within two or three days after death, it will be found in numerous folds or rugæ, which seem to be produced by the contraction of the muscular coat of the organ, leaving the mucous membrane free, so that it forms itself into folds, which I conceive have nothing to do with a diseased condition of the inner membrane itself. In a healthy state, the mucous membrane is not easily abraded.

The part of the stomach which appears to be most liable to inflammation, is the splenic extremity. In considering the diseased appearances of the stomach and intestines, it will be best to do so under the following four heads; colour, vascularity, exudation, alterations of structure.

1*st*, With respect to the colour, we have to determine whether or not it is owing to *post-mortem* changes; and we must also be careful to avoid the error into which Broussais and his disciples have fallen, of attributing every change of colour to inflammatory action. I must refer the reader to Dr Yel-

lowly's observations on the vascular appearances in the human stomach, which are frequently mistaken for inflammation in that organ * ; and more particularly to the first and third cases, in which the whole intestinal canal was minutely injected with dark-coloured blood in individuals who had suffered the last sentence of the law. In these cases, Dr Yellowly very properly supposes that the circulation is carried on in the capillaries for some time after the death of the individual. The appearance of the vessels, the exudation, and the structure of the mucous membrane itself, will, however, inform us, whether the colour described in Dr Yellowly's paper is fortuitous, or owing to diseased action.

We must also be careful to distinguish whether the colour depends on infiltration of blood into the sub-mucous tissue, or on inflammation of the membrane itself. A section of the part will shew this at once ; for on looking at the cut edges, we shall see the mucous membrane separated from the muscular coat by the infiltration ; the former having its usual healthy appearance. But it must be recollected that inflammation and infiltration very frequently co-exist ; and when we wish to decide whether the mucous membrane is discoloured, the suspected part must be extended upon the finger, and a scratch made with a scalpel through the mucous coat itself, which will give us an opportunity of ascertaining its vascularity and structure. The chief discolourations of the mucous membrane are, bright red, dark red approaching to purple, brown, slate-coloured, and black. I do not notice minute shades of these colours, because they are unimportant ; nor shall I mention a number of other discolourations which I have seen on dissection, because they are very doubtful signs of disease. It must be confessed, after all, that we are very liable to be deceived about the colour, as it is the most frequent, and, I apprehend, the first *post-mortem* change which takes place. But in the description given above, I have been led very considerably by the effects which I have seen produced by poisons which created inflammation before death.

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* In the 4th vol. of the London Medico-Chirurgical Transactions.

2*dly*, *Vascularity*. Our attention should, in the first place, be directed to ascertain whether the vascularity is arterial or venous; if the latter, large, dark-coloured veins will be observed ramifying under the mucous membrane, and there will be few minute, arborescent vessels containing red blood. In fact, we shall see the appearance which Dr Yellowly has so faithfully described in the two cases already quoted; in the first of which, "the whole of the abdominal viscera were loaded, as if by minute injection, with dark-coloured blood. *Here and there, however, there were florid vessels, which were distinctly traceable into dark-coloured ones.*" In the other, "the whole of the intestinal canal was minutely injected with blood, which was, for the most part, of a *dark crimson or purple, but here and there of a florid hue.*" If the vascularity is arterial, and connected with inflammatory action, we shall see red points, or numerous red vessels, along with ecchymosed spots in the mucous membrane, and we shall observe them not in depending parts only; in which latter situation they are always doubtful signs of inflammation, unless accompanied by a corresponding exudation or alteration of structure. It is always necessary to make a section, first of the mucous membrane, and then of the other structures, to prove whether the vascularity exists in the mucous coat or in the other tissues, or in all of them; if in the former, a slight cut made through the mucous membrane will divide the vessels, a little blood will exude, and the parts beneath will have the natural white appearance; and, upon tearing away the mucous membrane with a pair of forceps, the white appearance of the subjacent parts will be still better seen. The vascularity is also doubtful when there is disease of the heart, or any other cause which obstructs the circulation. Even in that case, however, I imagine the vascularity must be regarded as a diseased appearance; and, particularly, when it is recollected, that it frequently terminates in inflammation, and even ulceration, as will be shewn hereafter, when treating of phthisis.

In estimating the extent of the vascularity, we ought to recollect that it must diminish very considerably after death, and particularly in recent inflammations. On washing a piece of intestine in water, if it owes its vascularity to inflammation,

it will be more difficult to remove the colouring matter, than if it depends on imbibation.

3*dly*, *Exudation*. The first effect of inflammation on all secreting surfaces, is supposed to be a diminution of the natural secretion; but it is not certain whether this holds good in the mucous membrane of the stomach and bowels. In several instances it has presented a dry appearance, but these were cases of long standing chronic inflammation. The exudation merits our careful attention with regard to its tenacity, quantity, and colour. If it is viscid, and in considerable quantity, upon a surface which presents many red vessels, however partial the vascularity may be, it is to be regarded as the product of inflammation. It varies very much in colour, from that of ordinary mucus, to pus; and a red matter like currant jelly is frequently found; the exudation has been represented to be occasionally so corrosive as to excoriate the fingers of the dissectors; but I think there is some mistake about this. There can be no doubt, however, that the mucous membrane yields a large quantity of thick tenacious mucus, colourless like starch, when it is under the influence of any kind of irritation; this is well illustrated in the experiments performed with the tartrate of antimony in considerable doses, which I published in the 258th number of the Lancet. With respect to the red exudation, two kinds are observed; one, like very red currant jelly, which is produced when the membrane is under a high degree of inflammation; the other, of a much darker hue, darker even than venous blood, more fluid than the other, and occasionally discharged in very large quantity; this will in general be found in cases where there is great congestion of the mucous membrane, along with some degree of inflammation.

4*thly*, *Alterations of Structure*. The first appearance which falls to be noticed, is the pulpiness, with thickening of the mucous membrane. When it is in this state, the surface, if closely examined, looks rough and granular, and the membrane can be easily rubbed off. Abrasions are sometimes seen, but are not so frequently the result of acute inflammation as of chronic; at all events, they are not so extensive. This is an appearance, however, concerning which we are very

liable to be deceived; for when the membrane is soft, abrasions are easily produced by handling. Those which are produced by disease, will be readily recognized by placing the part in water, a portion will be entirely awanting, the edges will look ragged, and the surrounding part will be found detached. Ulcerations are now known to be a frequent result of acute inflammation; but there is some degree of ambiguity about the tissue primarily involved. Some allege that they exist in the glandular structure, others in the mucous follicles; while there are some who assert that the ulcerations take place in the mucous surface generally. My belief is, that all these opinions are partly correct.

It is now well ascertained that some parts of the mucous membrane of the stomach and bowels are more liable to inflammation and ulceration than others, which is shewn in Andral's table, at page 118. of this work. The inferior half of the ileum is the part most frequently found inflamed and ulcerated; according to my experience, the colon stands next to the ileum, and it is an extraordinary fact that the jejunum is seldom affected. Why it should possess this remarkable immunity from disease, has never been explained. In a case of poisoning from corrosive sublimate, it was in a perfectly healthy state, while the stomach, the lower part of the ileum, the colon and rectum, were affected most severely, even to the destruction of the mucous surface, and thickening of the other parts of the intestine, the peritoneal coat only remaining sound.

In proceeding to examine a piece of intestine, it should be carefully cut open with a blunt-pointed pair of scissors, and after the exudation is observed, it should be washed in water, till the mucus is removed from its surface. On some occasions we shall see numerous dark-coloured, distinct points, somewhat depressed in the centre, which are the mucous follicles enlarged; in some places a number of these points will be seen to coalesce, sometimes in a circular space, but in general they are more of an oblong shape. The surface is elevated, and sometimes spongy; and upon making a section through this part, it will in general be found that the submucous tissue is involved in the disease, and also occasionally

the muscular tunic. On looking at the surface through a glass, ulcerations will be discovered. This appearance is most frequently observed in the lower part of the ileum and caput cæcum, in children who have died from bowel complaints; they are supposed by many to be enlarged and inflamed glands; but this is a doubtful point.

Occasionally numerous distinct points will be observed, as if a pen full of red ink had been spattered over the surface of the mucous membrane; this I imagine to be produced by an exudation of blood from the follicles, which are also distended with it. It is also noticed by Billard, to whose work upon the diseased conditions of the mucous membrane the reader is referred for much useful information, as well as to the 1st and 2d vols. of Andral's Clinique.

On other occasions ulcerations are observed, of a circular or oval form, with defined margins, attended by the destruction, not only of the mucous membrane and the sub-mucous tissue, but extending into the muscular coat, which may be seen in different places in a ragged state. In addition to this, the mucous membrane is sometimes excavated to a considerable extent. The ulceration often destroys the greater part of the muscular coat, so as to affect the peritoneum, which will then be found thickened and inflamed; the external surface being either covered with coagulate lymph, or looking like an excrescence of a dark red colour. Occasionally, when ulceration attacks the mucous coat, the sub-mucous tissue and the muscular coat become infiltrated with lymph, and consequently a thickening of the rest of the intestine is produced, as if it were intended to strengthen it, and prevent rupture. When ulceration first attacks the muscular coat, it would appear that an effusion of lymph takes place in the outer cellular tissue, in which case it is difficult to separate the peritoneum from the muscular coat at the diseased part by dissection. Occasionally, indeed, the ulceration extends through all the tissues, allowing the escape of the contents of the bowels into the abdomen. Sometimes we observe distinct ulcerations on the mucous surface, inclining to the circular form, which are considerably elevated above the surrounding parts, resembling carbuncles, and having an appearance as if they

were to throw off a slough. Upon making a section of the intestine through the centre of one of these ulcerations, the cellular substance, and a part of the mucous coat, will be observed to be much thickened, and of a dark brown colour. Sometimes we see ulcerations in the bowels, of a circular form, and of various sizes, from a millet-seed to that of a shilling, with elevated and indurated edges; at other times, the ulcerations are very extensive, without any regular form, and in which the mucous membrane seems merely removed. Occasionally these ulcerations have a red appearance, or tinged of a yellow colour by the pus, and are surrounded by a great number of red vessels; but in other instances, they present a blanched appearance; which last will be principally observed in cases where there has been a great discharge by stool. In many instances, the part of the intestine which has already run into ulceration, will shew few or no red vessels; while other parts that are only advancing to that condition, display intestine arborescent vascularity.

Ulcerations frequently produce contractions of the calibre of the whole tube; but this is rare, unless the whole mucous surface is involved in the disease; and it is not exactly the ulceration which produces the contraction, but an effusion of lymph into the other coats, causing considerable thickening. Occasionally we see the mucous membrane intensely red and thickened, partly from inflammation, and partly from infiltration; and in one or two places presenting a seared appearance, as if it had been touched by a red-hot iron; it looks somewhat puckered and very dark coloured, and sometimes the neighbouring part is slightly mottled, as if from white granulations; but this is a rare appearance, yet I have seen it on several occasions, and always in the stomach.

An œdematous condition of the sub-mucous tissue is occasionally the result of acute action in the mucous membrane; it may be also found, however, in cases of general or partial dropsy. When the mucous membrane is sound, the effusion is not to be regarded as the result of inflammation. An effusion of air is also occasionally found in the sub-mucous tissue; but whether the result of inflammation, or a *post-mortem* change, is not satisfactorily determined. Mortification of the mucous

membrane is also an occasional result of acute inflammation. This presents itself to us under two forms; the one is generally observed in the stomach in cases of fever, and in the last stage of phthisis, in which the mucous membrane is removed over a great extent of surface, leaving it of a dark colour; the other is observed in the intestine, and particularly about the cæcum and ascending colon, in which the mucous membrane is lying loose, and in shreds of a very dark colour, and having the most offensive gangrenous odour.

Inflammation of the mucous membrane, more particularly of the colon and rectum, terminates in a general thickening of the membrane and the submucous tissue; and occasionally also the muscular coat is involved. The mucous surface is soft and spongy, sometimes abraded and very much discoloured; in some places of a bright red; in others, of a dark mulberry colour; no distinct vessels can be seen, and the discolouration seems to be partly owing to infiltration of blood. This appearance is very apt to be confounded with mortification, and is principally observed in the most acute form of tropical dysentery; but I have had many opportunities of seeing it in this country, in cases which ran their course in from eight to fourteen days; and in some of these instances the intestine was the eighth of an inch in thickness.

In some cases I have seen the mucous membrane of the colon and rectum, together with the muscular coat and submucous tissue, simply in a state of hypertrophy, to a great extent, which appeared to me to be the result of former inflammatory action; most of the subjects had been in warm countries, and had suffered from dysentery.

It is well known that ulcerations, which are attended with considerable loss of substance, undergo the healing process; and for some time afterwards the parts so restored may be distinguished, by an appearance of cicatrization, which pathologists are well acquainted with, and which is best observed in old cases of dysentery.

Sometimes we see tubercles in the mucous membrane itself, with more or less extensive ulceration; or the tubercles are found in the sub-mucous tissue, with ulcerations on the mucous surface, in various stages, and extending from the tu-

bercular elevations. These appearances are also principally seen in the colon in cases of phthisis; but I shall enter more fully into this subject in the next part of the work, when treating of Consumption.

There are, no doubt, many other appearances which are produced by inflammatory action in the mucous membrane; but a minute description of all would require a separate treatise, and is not consistent with the plan of this work.

It was my intention to give an abstract of the appearances described by Billard and Andral; but I found it a task of too much labour, from the diffuseness of their style, and from their observations being scattered here and there in their works; so that I have been obliged to give what I fear will be thought, by competent judges, a very imperfect description. It is, however, drawn from the preparations and drawings which I have been collecting for many years.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE STOMACH.

It is difficult to determine the meaning of most writers when they speak of Gastritis. Some use this term to indicate inflammation of the peritoneal coat of the stomach, which is a rare disease; others, the mucous. Inflammation of the peritoneal coat of the stomach has been already treated of in this work under the term Peritonitis.

By gastritis, I mean to express an inflammation of the mucous membrane of the stomach, frequently involving the submucous tissue, and occasionally the muscular coat. A great deal of obscurity also prevails in different works, from the use of the terms phlegmonous and erysipelatous, adhesive and erythematic, which I shall therefore be careful to avoid.

Inflammation of the mucous membrane of the stomach exists in various degrees of intensity, from the most acute to the slightest sub-acute form; and it may also be chronic. Acute inflammation of the mucous membrane of the stomach is a rare disease; it generally exists in a sub-acute, and a chronic form.

Symptoms of Acute Gastritis.—There is a burning pain in

the region of the stomach, increased on pressure; a constant desire for cold drinks, which are immediately ejected by vomiting; nausea, and inclination to retch, are incessant; the heat over the surface of the epigastric region is considerable, while the extremities are cold. At the same time, the patient frequently complains of sore throat; and upon examination, the fauces will be found inflamed. Hiccup is a troublesome symptom. The state of the tongue cannot well be depended upon; in the early stages, it often exhibits every kind of appearance that it is capable of putting on; in general, however, it is very red at the tip, and round the edges; loaded, and occasionally very rough in the centre, and towards the root; sometimes, in long standing chronic inflammation, it is red, glazed, and smooth; although I feel persuaded that this last condition of the tongue takes place more generally when the intestines are inflamed and ulcerated, than the stomach. The breathing is anxious and quick, and the patient is restless; the pulse is small, and the prostration of strength soon becomes very great; the countenance is expressive of great anxiety, and the individual makes great complaint. Towards the termination of the disease, the features shrink, and the patient lies upon his back. The matter vomited in the early stages, consists of the fluids taken into the stomach, occasionally mixed with bile and some mucus; but at last the black vomit takes place. The bowels are generally constipated.

There is scarcely any acute disease which so quickly sinks the powers of life, and hence it is said that the symptomatic fever is of a typhoid type. It happens occasionally, however, that the symptoms are exceedingly mild, even when the disease has been produced by mineral poisons; and appearances denoting great danger, do not come on till within a few hours of the fatal termination. This was particularly well marked in a soldier of the 17th foot, who swallowed a drachm of the muriate of mercury, and who died unexpectedly eight or ten days afterwards on the close stool; having been able to get out of bed, and walk to it by himself.

It has been already stated, that the acute form of this disease is a very rare occurrence, and that it more frequently exists in a sub-acute and chronic form; and we see these most

frequently in fevers, in dyspepsia, and in the last stage of phthisis.

Causes.—This disease is produced by any of the common causes which occasion inflammation in any other organ; and by wounds and contusions, as well as by poisons and other acrid substances taken into the stomach, and also indulgence in the use of ardent spirits; it sometimes also follows in the train of consequences from other diseases, as cholera morbus, &c.

Appearances on Dissection.—On opening the stomach, a considerable quantity of thick, tenacious mucus will be observed; and the mucous membrane itself will be found in one or other of the conditions already noticed in the general description. It may be mentioned, that the appearances produced by poisons so closely resemble the lesions occasioned by ordinary inflammation, that no distinction can be made; and the case must rest upon the fact of poison being found and analysed.

Treatment.—Bleeding copiously and frequently must be had recourse to, and at short intervals; there is no disease which requires a more decided use of the lancet. The application of leeches in considerable numbers may also be found necessary, either after the inflammation has been somewhat subdued by the lancet, or when the physician is afraid that it is too late for general bleeding. Blisters are, of course, to be employed when necessary. Laxative medicines are also necessary; but it is needless to administer them till the diseased action is considerably subdued, as they will increase the already too irritable state of the stomach; therefore, in the first instance, we are to endeavour to open the bowels by means of injections. Opiates are also useful; but it is necessary to caution young practitioners against the routine practice which is too generally followed, of giving opium whenever there is irritability of the stomach. When opium is given, it is often advantageous to exhibit it in the form of pill combined with calomel. The warm bath, and hot fomentations to the part affected, are means which must not be neglected; and it is necessary to restore and support the natural heat of the extremities.

During convalescence, the diet must be carefully attended to, and should merely consist, for the first day or two, of arrow-root or fine oatmeal gruel.

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE BOWELS.

INFLAMMATION of the mucous membrane of the bowels, varies more in its external signs than that of any other structure in the body, and for the most part its attack is most insidious. It is most frequently met with in a sub-acute and chronic form; even when acute, the symptoms are sometimes exceedingly mild; and this takes place occasionally in cases where we subsequently find on dissection, not only the most extensive inflammations, but ulceration; which will be more fully shewn when treating of dysentery.

Phenomena.—The combination of symptoms denominated fever, take place with more or less intensity; in fact, as already shewn, inflammation of this tissue is the cause of many of the fevers which prevail in all climates. Pain is often very slightly felt, in comparison with that which generally attends peritonitis; when the small intestines are affected, the pain is experienced more about the umbilicus than in any other region; cold drinks aggravate it, as well as any indigestible substance taken into the stomach. The pulse is found in very different states even during the same day; it is frequently quick, but not in general so hard as in peritonitis. The skin is generally hot and parched during the day and night, but towards morning some degree of moisture takes place, and it is then only the patient enjoys comfortable sleep. Thirst is often very great.

Tympanitic distention often causes considerable suffering to the patient, and aggravates the constitutional symptoms. The tongue is not a sure index of the state of the mucous membrane, as I have seen it perfectly clean and natural in colour, or foul without redness, when dissection revealed most extensive inflammation; but in general, the tongue will be found to be more or less red at the tip, and round the edges, however much it may be loaded in the centre; sometimes it is altogether red, and looks raw, and perfectly smooth; and

when it is unusually red, I look upon it as a certain indication of very considerable irritation, or of some degree of inflammation or ulceration of the mucous membrane of the bowels. When the superior parts of the tube are affected, there is more or less nausea and tendency to vomit; when the inferior parts are implicated, we find pain in the iliac regions, and in the course of the colon, with more or less diarrhœa, and considerable discharges of flatus; and when the colon is severely affected, there is that twisting pain in the bowels, which in medical language is denominated "tormina;" it comes on in paroxysms, with intervals of perfect ease. The patient complains of it every hour, or half hour, and even at shorter intervals, and it is always followed by an irresistible desire to go to stool. When the rectum is involved, there is considerable straining, and the patient can scarcely be induced to leave the close stool, and yet he passes nothing but a little mucus mixed with blood, or a small quantity of scyballous matter, with some flatus.

Every experienced medical man, upon reading these passages, will perceive that I have been describing the symptoms of diarrhœa and dysentery; but my wish at present is to describe inflammation of the mucous membrane of the intestines generally, as the peculiar nature of the discharges by stool, which constitute diarrhœa and dysentery, do not always attend inflammation of that membrane.

Women after delivery, are sometimes seized with this affection, and some imagine, that when peritonitis takes place in that condition of the system, it is always owing to the extension of the inflammation from the mucous tissue; which cannot be assented to, although it is sometimes the case, several melancholy examples of which have fallen under my notice. An instance of pure inflammation of the mucous membrane of the small intestines lately occurred to a woman, after an abortion at the fourth month, which resisted the most active practice, and terminated fatally. On dissection, the most vivid inflammation of the whole membrane was discovered, which several days maceration in water did not destroy; and a portion of it, which is put up in spirits in my museum, still retains its red colour. There were also a great number of abrasions,

which, had the woman lived a few days longer, would have been converted into deep and extensive ulcerations. Another fatal case occurred in the practice of a friend, after delivery at the full period. In this lady, the disease was apparently produced by her having eaten a large quantity of grapes, with the skins and stones, which were found in different parts of the intestinal canal. But in neither of these cases did the peritoneum suffer.

Treatment.—If the disease is very acute, the lancet must be used, but the cases which usually fall under our notice, will yield readily after the application of a dozen or eighteen leeches to the abdomen, together with warm fomentations, and the gentlest laxatives. If there is much tympanitic distention, injections with a small quantity of turpentine, or with an infusion of tobacco, will be found very serviceable. Opiates are useful, and the best preparation perhaps, under such circumstances, is the Dover's powder. We shall seldom be obliged to apply blisters, except in the very acute cases; but the disease is often mitigated by the application of hot spirits of turpentine, or a mustard poultice, which is to be removed in a short time, so as not to occasion vesication. Attention must be paid also to diet and clothing, particularly during convalescence.

Chronic Inflammation of the Mucous Membrane.—I have frequently occasion to see old standing chronic cases of inflammation of this tissue. Frequently they will be found connected with some cutaneous eruption, as lepra, psoriasis, &c. or with ulcers on the extremities. It will be observed, that the patients enjoy best health when the eruptions are most severe, or the ulcers most troublesome, and attended with copious discharge. These circumstances were first forced upon my attention twenty years ago, in a warm climate, and subsequent observations have tended to confirm them.

This pathology would seem to demand a different treatment from that generally pursued in diseases of the skin, as well as in many ulcers on the extremities, and will shew surgeons the propriety of attending a little more to medical pathology, so as to

enable them to treat even a common ulcer. I do not mean to assert that all ulcers are produced by this cause, but that many are so, I have no doubt; and it is necessary to point out the circumstances which will enable a young practitioner to distinguish them. When a person affected with an ulcer, says that he feels in better health when the ulcer is open than when it is healed, we may suspect that there is some internal disease; but when we also find his skin harsh, his thirst increased, the appetite impaired, or fastidious, together with some degree of nausea; if there is uneasiness, fulness and oppression in the abdomen, increased after taking a cold drink, or after meals; if he is affected alternately with constipation and diarrhœa, the evacuations fetid and discoloured; if the tongue is loaded, and of a red colour at the tip and round the edges, or universally red, or loaded, but covered with large and elevated papillæ at the root. If any of these symptoms exist, even in a slight degree, along with the ulcer, or become increased after it is healed, we may rely upon it, that the mucous membrane of some part of the intestinal tube is affected.

Treatment.—In the cases I have described, whether attended by ulcerations or eruptions, I have sometimes seen the most striking benefit from general bleeding, but this is not often necessary, unless the eruption is attended with much inflammation of the skin. In general, leeches applied every second or third day about the umbilicus, and repeated for some time together with the general warm bath, gentle laxatives, a bland dry diet, never allowing the patient to eat a large quantity at a meal, will be productive of great benefit. Subsequently counter-irritation, produced by the tartrate of antimony ointment, is to be used, and which, if persisted in for a sufficient length of time, will effect permanent cures, which are seldom brought about by other means; but I shall speak more fully upon the subject, in the 2d volume of the work, when treating of cutaneous diseases.

DIARRHŒA.

A PERSON who has frequent stools, is said to have a diarrhœa, which may exist with or without fever. The evacua-

tions are almost always fetid, discoloured, watery, or somewhat slimy, containing more or less feculent matter; and sometimes, on examining a watery or a slimy stool, small, round, and hard masses of feces may be found. Diarrhœa may also be attended with thirst; griping pains in the belly, which become relieved for a short time after an evacuation; and there is frequently tenesmus.

Pathology.—Diarrhœa is to be looked upon as a mere symptom instead of a disease, in which light it is too frequently regarded. The disease is some irritation or inflammation of the mucous membrane of the bowels, produced by fright, the application of cold, unwholesome, and indigestible food, diseased biliary secretion, constipation. These are the principal causes; so that we may have diarrhœa with and without inflammation. When there is inflammation, the constitutional symptoms are pretty well marked by the heat of the surface, and state of the pulse, particularly during the night.

Treatment.—From the short pathological description given above, it will be seen that the treatment must be considerably modified. If the affection is produced by the application of cold to the surface, the warm bath, a dose of Dover's powder, and subsequent attention to clothing, and particularly preserving the heat of the extremities, will be all that is required. If by unwholesome food, it must be avoided for the future; gentle laxatives must be given, to hurry the passage of the offending matter through the bowels, followed by an opiate, which will suffice. If by diseased biliary secretion, which is to be recognized by the existence of nausea, or even vomiting of considerable quantities of bile, together with the passage of bilious stools, which produce a pungent sensation in the rectum, and considerable tenesmus,—a little calomel and opium must be prescribed, followed by small doses of Epsom, or any other salts, largely diluted in water, together with copious drinks of gruel, or barley water, or any other bland diluent. If from constipation, which can only be recognized by examining the stools, that state must be removed by gentle laxatives, frequently repeated, conjoined with opium or hyo-

sciamus, and assisted by unstimulating injections. In this case, the warm bath is also serviceable; and after the bowels are fairly cleared of the hardened feces, the irritation is to be subdued by an opiate. If in any of these cases there should be considerable pain in the belly, with fever and a hard pulse, bleeding may do good, and as it cannot do harm, it should be employed. But should diarrhœa depend on inflammation of the mucous membrane, or should it be lighted up during the progress of the disease, whatever may have been the original cause, bleeding, either general or topical, ought to be employed, if the means above recommended do not succeed. Cases have occurred to me, where nothing else was necessary after abstracting blood from the arm, but which had previously resisted all the ordinary remedies for many days. If, notwithstanding the employment of these means, the patient is not relieved, or if he is so weak as to make us anxious to save blood, an injection of tobacco may be ordered. Opiates, attention to the diet, and counter-irritation, must be had recourse to. If in any case there is much tenesmus, a tea-spoonful of laudanum, mixed in an ounce or two of gruel, is to be thrown into the rectum. If a routine or a symptomatical practitioner were asked to prescribe for a person labouring under diarrhœa, he would do so from the name, and send either a laxative, castor oil and opium, or more frequently an astringent mixture; and in general he will be found to do so without reference to the different circumstances above enumerated.

It would appear that Hume, the celebrated historian, died from ulceration of the bowels, which was not recognized by his physicians *.

BOWEL COMPLAINTS OF CHILDREN.

The same pathological observations apply to the bowel complaints of children. In the course of practice, it is distressing to see so many children carried to the grave from a neglected state of bowels; and there is no class of complaints,

* The account of his symptoms and feelings, in his own words, is very interesting.—Vide History of England, vol. i. Introduction, p. xix.

which, when taken early, and treated according to good pathological principles, are more under controul. They frequently terminate by producing marasmus, and the complaint which I have presently to notice under the name of Tabes Mesenterica.

Much mischief is occasioned by the method too generally adopted immediately after the birth of children. They are scarcely dressed, when a tea-spoonful of castor oil is wantonly forced down the throat; or a great deal of sugar and water is given, for the unnecessary purpose of purging away the dark matter which collects in the large intestines during the two or three last months of the child's uterine life. We ought to be in no hurry in producing the expulsion of this matter, as if it were a poison, the retention of which was to carry death into the very vitals. In the course of my practice, I frequently see fatal bowel complaints produced by this cause, and it is no uncommon thing to discover that drastic purgatives have been employed. Not long ago, I was called to see a child under a fortnight old, who was taking half a grain of calomel and two of scammony twice a-day, although it had from fifteen to twenty stools during the course of twenty-four hours, and notwithstanding the exhibition of occasional doses of chalk mixture *.

Another cause of the bowel complaints of children, proceeds from the absurdities constantly committed with respect to their food. Soon after they have taken the castor oil, nurses insist upon giving food, consisting of thick gruel, which the stomach is totally incapable of digesting; flatulency is the consequence; they cry; and then the nurse flies to Dalby's carminative for relief, which produces ease for a time, but which, by inducing constipation, renders another dose of castor oil necessary; this in its turn frequently gripes. This the nurse attributes to the existence of wind in the stomach and bowels, and again thick indigestible food is given, to drive out the wind, which in its turn requires the Dalby. In this man-

* In this and many other cases, the drastic purgatives were given in the first instance to "clear out the bowels," and afterwards persevered in "to improve the evacuations," upon the scientific principle, I suppose, of knocking a man down, and afterwards kicking him for falling.

ner, the functions of the stomach and bowels are too often impeded, and not only impeded for the time, but the children are rendered ever afterwards liable to bowel complaints.

Daily do I see the advantage of pursuing an opposite plan with new-born children. I allow no laxative medicine to be given, unless the infant suffers from distension of the abdomen, which I take care to ascertain by examination. If this should be the case, the old plan of using a suppository, or a twisted piece of paper, will in general answer every purpose; but if it should not, then a laxative may be given by the mouth, and the best is a solution of manna. With respect to food, it ought not to have any thing of greater consistence than well made whey, or milk and water, till it can procure food from its own natural fountain.

Some children are so constituted, that do what we will, they have more than the natural number of stools, and yet they go on growing and thriving in a remarkable manner; in such cases little or nothing ought to be done, because there is good evidence that there can be no serious disease. Again, some children are naturally constipated, and yet they thrive; in such cases, also, much interference is unjustifiable, beyond changing the milk, or exhibiting a little manna. A healthy child at the breast, ought in general to soil from four to six napkins in the course of twenty-four hours; the evacuations after the first fortnight should look like well made mustard, with perhaps white specks here and there; it should also be of the same consistence in which mustard is used at table; it should have a sour smell, and possess no fetor. The stools, however, are sometimes green and watery; sometimes yellow and watery; sometimes brown and frothy, or white and frothy, as if mixed with yeast; and also whitish and hard, like half baked clay; occasionally blueish, and very often mixed with slime, or altogether slimy. When the stools are blueish, and particularly when whitish, like half baked clay, they are very sticky, and are expelled from the gut with difficulty. Instead of having the natural sour smell, they are fetid like the stool of an adult; or they may have a still worse smell, sometimes compared to rotten eggs, at others to train oil; and occasionally even still worse, like that which emanates from a gangre-

nous sore. Green and brown stools are generally watery, or mixed with mucus, and are occasionally discharged, when the child is held out, as if they came with violence from a squirt, and are often preceded by considerable signs of suffering.

The blueish and the whitish stools are generally few in number, but are attended with consequences fully as dangerous to the infant, as they terminate by producing diarrhœa of the most intractable nature. In many of these cases, the diarrhœa alternates with constipation ; and occasionally there is so much irritation in the rectum, that prolapsus ani takes place, attended with great suffering.

Many children go on thriving remarkably well, having a regular state of bowels till they are weaned, when, from the sudden change of food, a serious disturbance is occasioned in the stomach and bowels, announced by vomiting and purging, or by purging alone, the stools consisting at first of feculent matter, then mixed with mucus, and perhaps tinged with blood; and subsequently of a white serous fluid, like dirty water, which is discharged with suddenness and violence from the bowels. A child so affected is said to have the weaning brash, which has a very close resemblance to a complaint soon to be described, called cholera, and sometimes cholera morbus.

Treatment.—If the disease has been produced by the injudicious use of laxatives, these are to be discontinued or diminished in quantity, and conjoined with a very slight opiate, as, for instance, giving a quarter or half a drop of laudanum in a tea spoonful of a solution of manna. If from indigestible food, it is to be withdrawn, and the child must subsist upon the breast entirely. If there is good evidence of its own milk disagreeing with it, another nurse should if possible be procured. Green stools are often occasioned by the exhibition of calomel, which is too frequently prescribed by nurses themselves. The yellow watery stool, and the brown watery stool, often announce an excess of bile ; while the blueish and whitish stools, but particularly the latter, indicate a diminished quantity of bile. In the former cases, a little thin arrow-root, one small dose of calomel, followed by a little castor oil, and an occasional tea-spoonful of chalk mixture, together with the

warm bath, will be all that is required. But in the latter cases, five or six half grain doses of calomel, given either at night or in the morning, followed by an occasional small quantity of castor oil, and attention to the diet, will be sufficient to put the child in a fair way. According to my experience, the calomel is particularly necessary when the stools have the peculiar disagreeable odours formerly described. If much mucus is discharged, particularly if tinged with blood, and expelled as if it came from a squirt; if there is much fever, restlessness, peevishness, and thirst, and particularly if the child cries much and emaciates, medical men should be upon their guard, for if inflammation of the mucous membrane does not already exist, there are evidences of its being threatened. Solid food should be carefully avoided; and if the child is already weaned, it should be offered nothing but whey or ass milk. The warm bath is to be used morning and evening; and I have found powders composed of calomel, aromatic powder, and Dover's powder, with or without rhubarb, proportioned to the age of the patient, highly useful. To a child of three months old, I would give half a grain of calomel, the same quantity of Dover's powder, and two or three of the aromatic powder, every three, four, or six hours; to children under that age, a somewhat smaller quantity of the Dover's powder may be given, and it should be increased to those who are older. If the feverish symptoms still continue, I either apply a leech, or rub a stimulating embrocation upon the abdomen; but it is always safe practice to apply a leech early, which is not only justified, but loudly demanded, by the appearances on dissection, when the mucous membrane is seen, not only in a high state of inflammation, but also of ulceration, situated in the ileum and caput cæcum; and frequently the ulcerations are spread still more extensively. My museum contains many specimens of such morbid changes.

Sometimes we are not consulted till the little sufferer is greatly reduced, and it should be remembered that its vital powers may sink early from the peculiar severity of the disease. In such cases, we must be guided by the expression and colour of the face, state of the pulse, and the temperature of the body. If the expression is subdued, the face pale, the

features sharpened, the extremities and tip of the nose cold, and the pulse weak, a stimulant is instantly to be given, and the best one is brandy and water, proportioned to the age of the child; the warm bath is also to be had recourse to. It may be necessary to conjoin an opiate with the stimulant.

TABES MESENTERICA.

This is a disease in which there is great emaciation and enlargement of the abdomen.

After the bowels have been for some time in an irregular state, the child is observed to fall off very much in strength; the extremities and the face becoming much emaciated, while the belly is observed to be tumid; the appetite is fastidious, sometimes ravenous; there is great thirst, and frequently griping pains. Children so affected have some degree of fever, while others have no feverish symptom; but most commonly there is a febrile attack during the night, which goes off towards morning with perspiration. The abdomen feels doughy and knotty; at other times it is as tense as a drum. At first the tumefaction is owing to flatus; but as the disease goes on, effusion takes place into the cavity of the abdomen; there is constant purging, till at last the child dies exhausted, or is carried off by disease in some other part; the brain and lungs are the organs most frequently found to suffer in such cases.

Appearances on Dissection.—On dissection we sometimes discover chronic peritonitis, with enlargement of the mesenteric glands; but more frequently ulcerations of the mucous membrane of the bowels, the effect of long-continued subacute, or chronic inflammation. The whole of the internal surface of the colon is sometimes ragged; the rest of the coats of the intestine being, in general, very much thickened: at other times, the lower parts of the ileum and cæcum are affected; and occasionally ulcerations are seen in the jejunum, increasing in number, however, in the course of the ileum. Occasionally, when there is chronic peritonitis, I have been able to trace it to the extension of the ulceration from the other coats of the intestine.

Treatment.—The pathology of this disease appears not to be understood by the generality of practitioners. It is too often attributed to scrofula, merely because the mesenteric glands are known to be enlarged; therefore the muriate of lime is extensively employed by those who are *calcined* in old prejudices, and who are blessed with so much patience, that three years is not considered too long a period to wait for its good effects *! The disease should be treated as one proceeding from inflammation and ulceration of the mucous membrane of the bowels, which will also be the best practice, should the disease depend on chronic inflammation of the peritoneum. This treatment has been fully described at page 241, and need not be repeated in this place.

DYSENTERY.

This affection is also known by the name of flux; when attended with a discharge of blood, bloody flux.

I shall treat of dysentery under two heads,—acute and chronic.

Symptoms of Acute Dysentery.—It commences like a common diarrhœa, with griping pains in the bowels; frequent calls to stool, with an irresistible desire to strain over it; the evacuations are sometimes fluid and copious, with the usual fetor; at others scanty; and whether copious or scanty, there is occasionally seen, particularly in this country, some hard scybalous matter, with mucus, sometimes streaked with blood, and very fetid. In warm climates it is rare to see scybalæ; when there is feculent matter, it is very watery. After a stool, the patient feels more or less relieved, but soon another paroxysm of pain, frequently amounting to what has been denominated "tormina," takes place, and he may have a great many such attacks during twenty-four hours. In this country, for the first few days, the heat of skin is not much in-

* This foolish nostrum is now going out of fashion, being supplanted by borax, which, it is stated, will dissolve thickenings and indurations of the membranes of the brain! ! !

creased, neither is the pulse accelerated; the tongue is loaded, and generally red at the tip; the thirst is urgent; there is loss of appetite; considerable prostration of strength; and depression of spirits.

After the lapse of two or three days, more or less, the patient complains of fixed pain in the hypogastrium, and in one or both iliac regions, which sometimes becomes very distressing; it is increased by pressure, and I have been able to trace it, on many occasions, all along the track of the colon. Sometimes there is universal heat of skin; at others, the abdomen only will feel burning hot to the hand, while the rest of the body is cool, nay, the extremities may be ice cold, and the patient may complain of frequent rigors; the evacuations from the bowels, at first feculent and copious, now become more frequent and scanty, consisting entirely of mucus, or of mucus mixed with blood, or they may be still watery, and of a dark brown colour, with portions of slime here and there; or they may have the appearance of dirty water slightly tinged with blood, with now and then a little scybalæ. The stools become more and more disagreeable in odour, till at length an experienced person will be able to recognize the smell to be dysenteric upon first entering the room. The tenesmus is more distressing, together with a cramp-like feel in the thighs and legs, but is relieved after each evacuation; it is with difficulty that the patient can be persuaded to leave the close-stool, and to lie down in bed. The urine is frequently suppressed, and the patient suffers a good deal of pain from that cause. Thirst increases; cold water is preferred, from which the patient cannot refrain, although he knows it is bad for him. The tongue is more loaded and florid; or it has by this time become dry and glazed. The skin is either parched or covered with copious perspiration, which, in the worst cases, does not appear to mitigate the symptoms, although some relief is experienced in slighter instances. When the skin is universally hot and parched, the pulse in general will be found quick, full, and bounding, but when the extremities are cold, it will perhaps feel weak and thready; yet, in some instances, the pulse is not much changed from its natural state, neither are the other symptoms troublesome, till within twenty-four hours of death.

Sometimes the patient preserves some degree of appetite for some days; but in the course of two or three hours after eating, the articles of food are passed by stool in an undigested state. The patient emaciates quickly; the despondency increases; and as the disease advances, his bodily weakness increases, till at length he is unable to obey the frequent calls to go to the close-stool. He lies upon his back, unable to move, and at length passes his stools involuntarily, which appear as if mixed with shreds of membrane, and occasionally they resemble pease soup, and sometimes are even like pure pus; or they still continue to consist of mucus, more or less tinged: the bowel is constantly in a state of protrusion, and the fetor which emanates from the patient is almost intolerable. In warm climates, I have seen an appearance as if large portions of the mucous membrane had been thrown off in a state of mortification, and I knew one patient recover after such an event. Dr Ballingall and others mention the same circumstance as having occurred in their practice; but recovery in this stage is almost out of the question. The pulse sinks; the pain ceases; and the mind, which has hitherto been quite clear, now becomes disturbed; a cold clammy sweat takes place, and death shortly closes the scene. Hiccup and vomiting are occasional symptoms; and during the progress of the disease, the symptoms frequently undergo remarkable remissions, which excite hopes of recovery. I have seen the strongest men destroyed by this form of the disease in four days; but in general the case is protracted for two or three weeks.

Symptoms of Chronic Dysentery.—This form is rarely met with in this country, unless in individuals who have come home from warm countries, where they had suffered from frequent attacks of the disease. In chronic dysentery, patients are affected with severe fits of griping about the umbilicus, like colic, which are quickly followed by an irresistible desire to go to stool, when a great deal of flatus is discharged, along with an evacuation which is sometimes of a dirty brown feculent matter, sometimes even much darker in colour; at others it is greenish or yellowish; and occasionally the stool looks yeasty, or resembles thin gruel; sometimes, according to Mr

Marshall, they are like rice water, or water in which a small proportion of white clay had been diffused. Sometimes there is only a sense of weight in the abdomen, and very often acute pain is perceived, upon pressure, in the course of the colon, but more particularly in the situation of the caput cæcum. After each paroxysm of pain, and subsequent stool, the patient enjoys a longer or a shorter interval of ease, unless he is scalded about the arms, which vexes him for a considerable time. The skin becomes parched, and the pulse quickened; the appetite is impaired in some cases, while it remains good in others; but the patient will be observed to be worse after a moderately full meal, and occasionally there is nausea. Thirst is a pretty constant companion. The tongue presents various appearances, sometimes loaded, the fur being of a yellow colour: at others it is loaded in the centre, and reddish at the tip; sometimes rough, and often it has the appearance which has been already described in this work, red, raw-looking, and quite smooth as if glazed. After these symptoms have continued from two or three to twelve or fourteen days, the stools are found to consist of whitish mucus, frequently mixed with undigested food, and are almost always passed with considerable straining; the tormina increases; borborygmus is troublesome; the patient loathes food more and more; nausea is more complained of, and bilious vomiting occasionally takes place; thirst increases, as well as debility and emaciation; hiccup is often very troublesome; and the pulse becomes quicker and quicker, gradually losing its strength, and the skin looks sallow; at last death takes place. In the latter stages, the abdomen sometimes becomes more tumid; at others it is flatter than usual. Occasionally acute peritonitis cuts off the patient, from the escape of the contents of the bowels into the abdomen through an ulcerated opening.

Appearances on Dissection, with Pathological Remarks.—In this country dysentery is rarely fatal, unless it attacks individuals who have suffered severely from the same complaint in India; nevertheless, my museum contains sufficient proof that it is more fatal than is generally supposed, and that examinations

after death unfold the same appearances as seen in the mucous membrane in tropical climates. I have known several fatal cases in Edinburgh, which ran their course in from nine to twenty days, and in which the whole of the colon, and part of the ileum, were in a state of complete mortification, the parts having the gangrenous fetor. In other instances, the colon, throughout its whole extent, was thickened and contracted; the mucous membrane being soft and spongy, and dark coloured, looking more like a livid fungous excrescence than an ulcerated surface; the colour being retained even after maceration. An opinion has been too prevalent, that dysentery is always connected with a vitiated state of the bile, or actual disease of the liver itself; but the writings of modern pathologists have dispelled such erroneous notions.

Dr Ballingall, in proceeding to give an account of the appearances found on dissection, in his excellent work on Fever, Dysentery, &c. states, that in a great proportion of cases these appearances consist of an inflammation of that part of the intestinal tube situated below the valve of the colon, "without the smallest trace of disease in the structure of the liver."

The following are the appearances described by staff-surgeon Marshall, in his valuable work entitled, "Notes on the Medical Topography," &c. &c. I have great satisfaction in quoting from this author, because I know that his descriptions were drawn when standing at the dissecting table, with the morbid parts before him, and not copied from books:—"Upon examining the bodies of Europeans who have died of dysentery, (says he,) the extent of structural derangement discovered is often very great."

Omentum. This organ is sometimes found greatly diminished; more frequently it is found much thickened, interspersed with numerous vessels turgid with dark-coloured blood, and easily torn. Sometimes it adheres with great firmness to the intestines, occasionally stopping up ulcers. Perhaps it adheres more frequently to the cæcum than to any other portion of the intestinal tube.

Intestines. The folds of the intestines are often found agglutinated together. Sometimes they adhere to the liver, and occasionally to the bladder. The colon appears studded or

streaked with dark red or plum-coloured spots. Sometimes the contents of the intestinal tube are found in the cavity of the abdomen, having passed through a gangrenous orifice in the coats. When handled, the large intestines feel thick, heavy, and lumpy; they are likewise, in many instances, easily torn.

Upon removing the intestines from the body, and slitting them up through the whole extent, a great number of lumbrici are commonly found; but as worms exist so generally in the intestines of Europeans in this country, their appearance cannot be considered as connected with dysentery. The inner surface of the duodenum is found covered with a viscid, glairy, semi-fluid substance, which has sometimes a yellowish, sometimes a greenish colour. Towards the inferior half of the ileum, small quantities of fecal matter are occasionally found, having a bright yellow colour, and some degree of consistence. The contents of this intestine frequently resemble the healthy alvine evacuations of young children. The colour and consistence of the fecal contents of the ileum are suddenly changed immediately upon passing into the cæcum. Nothing is ever found in the large intestines but a brownish offensive fluid, similar in appearance to the watery dejections which mark the last stage of dysentery. The intestines were never found to contain either scybalæ or fecal accumulation.

The coats of the small intestines are generally healthy; sometimes they are redder externally than natural; this redness appears to originate from venous effusion rather than from an actively excited state of the vascular system.

The mesocolon is frequently found much thickened, and containing a great number of vessels gorged with blood.

The chief traces of disease are found in the large intestines. The villous coat of the cæcum, colon, and rectum, when expanded, sometimes appears dark red, and extremely turgid; the turgescence is occasionally so great, as to resemble the tumid state of the inflamed conjunctiva during a violent degree of purulent ophthalmia.

Sometimes the villous coat appears, at a little distance, to be covered with a blueish puriform fluid, and thickly interspersed with dark grumous spots and patches. When more

narrowly examined, the villous coat is found to owe the appearance of being covered with puriform matter to an extravasation of fluids into the substance of it, by which means it acquires a swollen and pulpy appearance. The dark red grumous patches are portions of the villous coat in a gangrenous state. These spots are generally surrounded by a red circle, the areas of which are various; frequently they are not more than about a third of an inch. Sometimes an individual slough may be compared to a tainted oyster. The mortified portion of the villous coat that is situated within the red circle is easily removed from the muscular coat, which is commonly found, apparently not changed from a state of health. In some instances, the central portion of the slough had disappeared, leaving an excavation in the villous coat, as if a portion of it had been cut out. Even in these cases, the muscular coat was commonly sound. The villous coat was generally unattached at the margin of the excavation, and the finger could often be easily pushed under it from one depression to another. Sometimes, however, the sloughing extended into the muscular coat, and even into the peritoneal coat, which was rendered evident externally by the mulberry-coloured patches. The dark spots on the peritoneal coat are always much less extensive than the correspondiug gangrenous portions of the mucous membrane. While one part of the large intestines has lost its natural tenacity from gangrene, another has sometimes acquired an increased power of resistance, and when cut into, conveys a semi-cartilaginous feeling to the hand. Sometimes large portions of the villous coat are found sphacelated without any intervening living parts. In these instances, it is extensively separated from the muscular coat, and is sometimes found loose in the cavity of the intestine. The gangrenous shreds occasionally stretch across the diameter of the intestine, like a bow-string. The separated portions of the villous coat are torn by the slightest force. They resemble, in appearance, pieces of dirty lint imbued with the ichorous discharge of a gangrenous ulcer.

Sometimes small collections of purulent matter are found between the villous and the muscular coats. This is, however, not a frequent occurrence.

Occasionally dysentery leaves traces of disease in the large intestines of a different kind, namely, tubercular ulceration. Ulcers of this character are not unfrequently found spread over portions of the villous coat, and, for the most part, in a remarkably distinct and uniform manner. That portion of the villous coat which intervenes between the ulcers, has in general a loose, pulpy appearance. Sometimes it is turgid and reddish. Viewed at a little distance, the inner surface of the intestine appears to be sprinkled with a soft, curdy-like substance. These cream-coloured specks are of various sizes; sometimes they are not more than a line; at other times they are an inch in diameter. Upon examining a small speck, the whitish substance is found to protrude a little beyond the surface of the intestine, and adhering, but not very firmly, to the villous coat. After removing this substance, a depression or incipient ulceration is exposed. The base and margin of the indentation are generally dark red. The depression eventually increases, and becomes an ulcer, which is always encircled by a red portion of the villous coat. Sometimes the ulcers resemble the ill-conditioned sores, with prominent edges, which occasionally occur on the inside of the lips, particularly during a severe course of mercury. In general, the base and edges of the ulcers are indurated, unequal, and scabrous. When a section is made across them, a gristly feeling is communicated to the hand. The tubercular appearance of these ulcers is very remarkable. They sometimes resemble warty elevations, with excavated apices, in a state of ulceration. For the most part, ulcers of this kind are oblong: in length, they extend from half an inch to an inch; the breadth is seldom above half the length. The longest diameter is always in a transverse direction to the cavity of the intestine.

Such are the more common traces of disease found upon inspecting the bodies of individuals who have died of dysentery, more particularly among Europeans. Death rarely, if ever, occurs among this class of people before a certain degree of gangrene of the villous coat of the large intestines has taken place.

Abscesses and other morbid states of the liver are occasionally concomitants of dysentery. When traces of disease in

the liver were discovered on dissection, the circumstance is noted in the table of casualties. The nature of the structural changes of this organ has already been mentioned. Upon examining the bodies of Malays that have died from dysentery, traces of disease of a less active character are discovered. The mesentery and meso-colon are generally found massy and dark-coloured, from turgid blood-vessels and the lymphatic glands greatly enlarged. The coats of the large intestine are thickened and firm; frequently the calibre of the intestine is greatly contracted. The villous coat is, in these cases, unequal, puckered, and covered with a gelatinous muco-purulent substance. Occasionally, however, instances occur where the inner surface of the colon is found sprinkled with grumous spots in a state of mortification, and sometimes the sloughing portions are extensive.

Some years ago dysentery was very prevalent and fatal in Ireland, which afforded Dr Cheyne and others the most extensive opportunities of making *post-mortem* examinations. They had the best proof that the primary and chief seat of the disease was in the mucous membrane of the intestines; the liver was sound in a majority of cases, but often otherwise. In two instances abscesses were found, and in many others great sanguineous congestion.

According to Dr Cheyne, the intestines were variously affected; in some cases they were prodigiously distended; the small intestines measuring from seven to nine inches in circumference: in some the coats were much injured without thickening; in others considerably thickened as well as ulcerated. In some cases the inflammation of the mucous membrane was most extensive, extending from the stomach to the rectum; the inflammation being always greatest towards the large intestines, the rectum being, however, sometimes sound.

Causes.—Dysentery is a disease which attacks individuals of all ages, and all classes of society; although those are more liable to it who are most exposed to vicissitudes of climate, and who are badly fed and clothed. Irregular habits also predispose to this disease. In warm climates it is found that Europeans suffer more than natives. Upon inspecting Mr Mar-

shall's tables, it will be seen that the disease is fatal during every month in the year; therefore it must occur in all kinds of weather. It is more peculiarly a disease of tropical climates; although we often see it in other situations, yet it is neither so prevalent nor so fatal. It also seems to depend upon the same exciting causes as fever. Although diseased secretion of bile may occasionally produce both diarrhœa and dysentery, yet these diseases ought not to be so invariably imputed to this cause.

Treatment.—The method of treatment which is generally found necessary in this country, shall be first shortly stated; and then that which ought to be adopted in warm climates in the acute and chronic form of the disease.

1*st, Treatment of Dysentery as it occurs in this country.*—The same plan is to be pursued as in severe cases of diarrhœa. The body is to be warmed in a hot bath; and as we are anxious to get rid of any offensive matter that may be in the bowels, in the first instance, an ounce or half an ounce of castor-oil is to be given, with twenty, thirty, or forty drops of the sedative solution of opium; but if the stomach is too irritable to bear the castor-oil, calomel with a small quantity of opium, is to be given in pills every second, third, or fourth hour, till a feculent evacuation is procured, assisted by a large injection of warm milk and water, or thin gruel; or small doses of salts may be given by the mouth, and repeated at short intervals. It is wrong to suppose, that in all instances of dysentery in this country, there is hardened feces lodged in the bowels; but as this is sometimes the case, and certainly more frequently than in warm climates, the plan above recommended should be persevered in till the scybalous matter is discharged. This points out the necessity of a careful examination of the alvine evacuations, which has been already so much insisted upon in other diseases.

If, however, we find a patient with considerable griping and tenesmus, hot skin, and a quick pulse, although it may not be particularly strong, it will be right to bleed him, especially if there is pain on pressure; and perhaps it will be safest to draw

blood before the laxatives are administered. One good bleeding will in general suffice; if there is much subsequent tenderness, leeches may be had recourse to, if necessary. After the diseased action has been thus reduced, and the scybalous matter got rid of, we may have recourse to large opiates by injection. It appears to me that the reason why opiates are not attended with more success in the hands of some practitioners, is, that they are exhibited in too small quantity, and that they do not proportion the dose, in any degree, to the violence of the symptoms. If we suspect the liver to be disordered, small doses of calomel and blue pill may be given, but there is no necessity for affecting the mouth.

Counter-irritation to the abdomen is to be had recourse to, and the best method of producing it, is by the frequent application of hot spirits of turpentine; but should the disease be very severe, a blister must be used. The attendants should be particularly cautioned to watch the heat of the extremities, and to apply hot bottles to the feet when necessary.

In the excellent clinical reports, with which Drs Stokes and Graves have lately favoured the profession, it is stated, that strychnine, in doses of one-twelfth of a grain, given in a pill twice a-day, was found useful in the Meath Hospital. They tried this remedy on the authority of Dr Rummel in the June Number (1825) of Hufeland's Journal. On some late occasions this remedy has been tried in my practice, and was found exceedingly beneficial, even in cases where there were most extensive ulcerations in the bowels. It succeeded after every other remedy had failed. I have also seen beneficial effects from the acetate of lead, given in two or three-grain doses several times a-day. The sulphate of copper has also been strongly recommended in such cases by Dr Elliotson, since which I have given it a trial, and can speak so favourably of the remedy.

The sufferings of patients are often much aggravated by flatulent distention of the intestines, which may generally be relieved by turpentine, assafœtida, or tobacco injections. During convalescence, the greatest attention must be paid to diet clothing, and exercise.

2d, *Treatment of the disease as it occurs in warm climates.*— The only difference which is to be kept in view between the treatment of the disease as it occurs in this country and in tropical climates, is, that it is more severe, and of course requires more active practice. It is also necessary to impress on the minds of those who are destined to practise in warm countries, that cases are frequently fatal, owing to the insidious nature of the attack, and the mildness of the symptoms. That such cases are frequent, any reader may satisfy himself by consulting the works written upon this subject; and it has led some to divide the disease into two varieties; for instance, Mr Annesley states that there are two varieties, the acute and erythematic. "The first," says he, "is acutely inflammatory, and if not checked by bold and decided practice, will very soon terminate fatally, or lay the foundation of that chronic stage of dysentery which disables so many men. The second is more obscure, and consequently more dangerous. There is dull, deep-seated pain in the bowels, sufficient to distress a patient, but not so severe as to excite alarm. There is no external pain, the pulse is not materially altered, neither is there any increased febrile action. This disease," continues he, "is confined to the mucous membrane of the colon, and consists of a less acute form of inflammation of this membrane. If not treated successfully, it runs at once into ulceration throughout the whole intestines."

These extracts are taken from Mr Annesley's octavo work, which contains much valuable information. It appears to me, that the term erythematic is most unhappily chosen, at least in contra-distinction to the first variety, as the inflammation in both cases may be said to be erythematic.

Great prejudices have prevailed in India, and I fear still exist, against the employment of general bleeding both in fevers and dysentery; and the action of calomel is too much trusted to. Drs Johnson and Ballingall were among the first who, by example and precept, endeavoured to root out this error, by an appeal to the morbid appearances which I have already described. In later times, we have received additional testimony of the advantage of general bleeding. Mr Annesley, in detailing the treatment of the acute form, when

it occurs in plethoric individuals, recommends general bleeding, and states, that much is to be done in a few hours, and if it be not got under controul in that time, the patient is either lost, or the basis of a broken constitution is laid. But in those who have been long in India, and, I suppose he means, who have shattered constitutions, he says leeches will answer better, because they "diminish action without destroying power; and any quantity of blood may be taken by them." I cannot agree with this too sweeping statement; for I am certain, by experiment and careful attention, that individuals will bear the loss of blood better, ounce for ounce, by general bleeding, than by leeching. The cause of this remarkable circumstance cannot be determined, although it appears probable that it may in part be attributed to the long-continued unpleasant sensation produced by the biting of the animals, and to the fatigue produced by the operation; but I am satisfied of the fact. Leeches are certainly to be preferred, however, when the disease is of long standing; they operate beneficially in many cases, when general blood-letting would no doubt prove injurious. Two great advantages which the lancet possesses over leeches, are, that we can stop the bleeding from a vein in a moment, and we alter the determination of blood promptly.

At page 278. of Mr Annesley's octavo work, the following passage will be found:—"Full doses of calomel, with such other purgatives as act upon the mucous glands, are required here, and should be continued without intermission till healthy action is produced." It is too evident, even to those who have never seen the morbid changes produced on the intestines, but who have read the accounts of these changes, who are acquainted not only with the dreadful mortality which is caused by dysentery among Europeans, but who have seen individuals reduced to premature old age return to this country in the hope of deriving some benefit from change of climate, that much injury has been inflicted by the treatment too generally pursued by medical men in the East; and upon which the passage last quoted affords me an opportunity of commenting. At this moment, I have before me the detail of many cases, which have been corroborated by fre-

quent communications with practitioners who have served in India, of the baneful effects of the practice which seems still to be inculcated by Mr Annesley.

It is the custom in India to give calomel in large doses, and frequently repeated, which is followed by the daily exhibition of drastic purgatives; as for instance, the infusion of senna, both of which are given, to use Mr Annesley's words, "to act upon the *mucous glands*, and are to be continued without intermission." Under this treatment, the proportion of deaths is sometimes so great as 20 per cent. and on some occasions, it has been known to be about 30 per cent. Thus, Dr Ballingall has shewn, that in his Majesty's 59th Regiment, during eight months of the year 1806, ninety-seven men were affected with dysentery, of which number twenty-eight died; and in his Majesty's 30th Regiment, during seven months in 1807, four hundred and ninety-one men were affected with dysentery, of whom eighty-five died; and in the Royals, during eight months in 1808, five hundred and forty-one men were affected with the disease, of whom ninety-eight died. I have also some details of the result of mercurial practice in India, in my possession, which shew the enormous quantities of calomel exhibited in dysentery of late years, with the bad success of the practice. It is no uncommon thing for an individual to take three hundred grains of pure calomel, before he dies under the digestion of it. One individual took the enormous quantity of five hundred and twenty-three grains; another six hundred and ninety-five; a third, seven hundred and sixty; and a fourth, nine hundred and seventy-four, which is somewhat more than sixteen drachms! So far from curing inflammation and ulceration of the mucous membrane of the bowels, I know no plan more likely to produce these states; but it is doubtful, whether the calomel, or the continued use of drastic purgatives, is most injurious. The generality of purgatives operate by producing irritation and increased secretion on the whole mucous surface, which is the very thing that ought to be carefully avoided. It appears that many practitioners act upon the principle of getting rid of the mucous discharge, as if it were lodged in the bowels, acting

like a poison; whereas it is to be regarded as the effect of increased action. Let it not be supposed, that I object altogether to the use of calomel. My observations are only intended to prevent our trusting entirely to its operation, and to guard against its abuse. I shall conclude, by quoting the result of Dr Cheyne's experience in the treatment of dysentery, which prevailed in Ireland, with respect to mercury, stated in the Dublin Hospital Reports. "Mercury (says he,) could not be depended upon, and did not relieve in numerous instances when the mouth was affected, and sometimes seemed to increase the disease; and even when the symptoms distinctly pointed out a morbid organization of the liver, the result of this treatment was unsatisfactory." My own experience in this country, as well as within the tropics, enables me to confirm the above statement.

Treatment of Chronic Dysentery.—It must always be recollected, that no case of dysentery is to be regarded as altogether hopeless; and from the recoveries which I have seen made, and from the dissections at which I have been present, of individuals who have been long afflicted with the disease, it may be stated as a fact, that the mucous surface heals and becomes restored, if not to its primitive healthy state, at least in such a degree as to preserve life for many years. It is rare in chronic dysentery, that we shall be called upon to take blood from the arm, but the occasional application of leeches is most serviceable, together with counter-irritation, gentle laxatives, an occasional opiate, and astringent medicines, such as catechu, and solution of sugar of lead, and sulphate of zinc. Great care must be taken of the bowels and the diet, small quantities of light and digestible food are to be allowed at each meal, and the patient should not be permitted to eat oftener, of any thing, than once in five or six hours. I have been very successful in the treatment of chronic dysentery, by following this plan, together with an occasional hot bath, and long perseverance in the tartar-emetic ointment, as well as by the occasional use of mutton suet boiled in milk, which is to be strained immediately after it is taken off the fire; sugar is then to be added, with a

little spice to make it palatable; about four ounces of this is to be taken once or twice a-day, if the patient's stomach will bear it, and may be mixed with rice*.

CHOLERA.

This term, together with the adjunct, morbus, is used, even in common language, to express that a patient is affected with vomiting and purging. I shall first describe the disease which we see in this climate in hot weather, and which is frequently denominated cholera morbus; and afterwards the form which prevails in India.

In this country, the disease presents the following phenomena. The first symptoms are, nausea and griping sensations, which, generally speaking, come on suddenly, and soon terminate in vomiting and purging. The body, and particularly the extremities, become cold in very severe cases, the breathing hurried, the features shrunk, the eye hollow, with an expression of great anxiety in the countenance, the pulse small and contracted, and soon ceases to be felt at the wrist; the thirst is excessive; cold water is the beverage most preferred, which is no sooner swallowed than rejected. A cramp-like feel is complained of in the legs, and sometimes in the arms, as in the severer cases of diarrhœa and dysentery. The discharge from the bowels, in this country, is generally watery, containing feces, very thin and offensive; occasionally the discharge looks like water in which meat had been soaked; at other times, bilious-looking matter is passed in the first stage of the disease, both upwards and downwards.

Causes.—The causes are the same as those which produce other bowel complaints; as cold feet, suppressed perspiration from sudden exposure to cold, cold drinks when the body is much heated from exercise, crude vegetables, &c.

Cholera prevails in this country, chiefly in the autumn months succeeding to hot summers. In 1808, some very bad

* This is an old remedy:—The patient should, in general, be kept ignorant of the nature of the preparation, in case of disgust.

cases fell under my notice; and again in the autumn of 1825, when I had the treatment of five or six very dreadful cases.

The disease which prevails in India, and which has destroyed so many valuable lives, is generally termed Spasmodic Cholera. At Madras it is known by the name of Mort de Chien. There is reason to believe that cholera has existed always in the East, but it has prevailed more at one period than another. Formerly the medical officers employed by the East India Company, seem to have had only in view the prospect of making a fortune; the interest of science, or gaining high professional reputation, appear to have been quite neglected; and it is lamentable, that in such a field for observation, so little has hitherto been done for pathology; but there is now a better promise, as is demonstrated by looking at the writings which have been given to the profession within these ten years; but still I fear a great lack of zeal prevails, and must prevail, as long as the present system adopted by the Honourable East India Company exists, with regard to three points: 1*st*, Respecting the appointments; 2*dly*, Promotion; and 3*dly*, The constitution of the medical boards, which, instead of consisting of men of first rate talents, is composed, generally speaking, of very respectable old gentlemen, who obtain the appointment as a matter of course, whether they possess talents or not.

Cholera appeared in India in the worst form in which it has been observed by any individual of the present generation, in August 1817; since which time it has attracted very great attention. It has also been observed in the islands situated in the Indian seas.

Phenomena.—It is difficult to give an account of the phenomena, so as to agree with the descriptions which have been given by the various writers. In some, there were no spasms; in others, purging without vomiting, or *vice versa*. Again, in some places, convulsions were often seen; and in others, the powers of life quickly gave way. The following description is taken from the inaugural dissertation of the late Dr James Kellie, surgeon in the Madras army. It is made choice of from its conciseness and correctness.

"It is generally ushered in with languor, lassitude, pros-

tration of strength, anxiety, great dejection of mind, and a sense of cold. In this stage of the disease, the pulse becomes weak, and the skin cool, then follow diarrhœa, vomiting of an aqueous and subalbid matter, urgent thirst and spasms, chiefly in the abdomen and calves of the legs. The pulse is scarcely to be perceived, and the breathing, with frequent sighing, is difficult. All the symptoms now become worse. Spasms more and more urgent take place, and accompanied with very great pain. The pulse is not to be felt, heat leaves the body, and the skin is covered with cold sweat, the eyes, turned up in their sockets, sometimes appear red and suffused with blood, the head, as if borne down by its own weight, rests upon the breast and shoulders, and the hands hang motionless. The body is sometimes convulsed, and at others lies incapable of motion. Vomiting usually ceases altogether about the termination of the disease, but stools are passed involuntarily. At last the patient falls into coma, from which he can hardly be awakened; when roused, he again immediately falls into it, and lies moribund.

"Through the whole course of the disease, the urine is very sparingly secreted. The matter which is discharged from the stomach, and at stool, has the same appearance. The tongue is pale, and generally moist; there is restlessness, sometimes though rarely delirium occurs."

"The symptom (says Mr Annesley, at page 36, octavo ed.) which I have always looked for as particularly marking this disease, and I have never seen a case of the epidemic wherein it did not exist, is a burning sensation between the scrobiculus cordis and umbilicus, precisely over that spot where the vermilion blush is invariably found on examination after death. This is one of the first symptoms the patient is sensible of, and it is generally felt before vomiting or purging takes place. Whenever this painful sensation is accompanied with an anxious look, and a general feeling of weakness or oppression, even without vomiting or purging, we may be certain the disease is at hand; and at this stage it is generally manageable, if boldly and decidedly treated."

An interesting fact is observed in cholera, and in a less degree in the cold stage of intermittent fever, which is the im-

possibility in the worst cases of raising the temperature of the body by the application of heat. A strong instance of this is mentioned by Mr Daun, in the Medical Reports on Cholera, p. 272. "O'Brien lay on the steam couch for three hours before he expired, in a heat that I am convinced would have raised a lifeless body to a temperature nearly, if not equal, to that of a person in health, but his body preserved an icy coldness to the last."

Causes.—Notwithstanding the interest which this disease has generally excited, it must be confessed that we are quite in the dark respecting the specific cause, when it appears like an epidemic. Some think it contagious, because the disease spreads from post to post, in the exact track of human intercourse, and in the very teeth of the most dreadful monsoons. On the other hand, its attack is too sudden and general to lead us to attribute the spread of the disease to contagion; and it also disappears too suddenly to reconcile it with any of the known laws of contagion. For example, it appeared suddenly in many situations, created great ravages during one day and night, and disappeared in the course of a few days afterwards. Thus, we are informed by Mr Alardice, surgeon of his Majesty's 34th Regiment, that the disease attacked that corps on the 21st September, and committed dreadful ravages before night. On the 25th it abated remarkably, and in three days more entirely vanished. If it were contagious, it must have affected a greater number of individuals than have been actually seized, particularly as no steps were taken to prevent communication with the sick; and it appears from authentic accounts, that only about 7½ per cent. of an immense population were attacked with this disease, when raging with its greatest fury. It seems to have occurred under every condition of the atmosphere, when the weather was close and sultry, as well as when it was very cold and dry. But it would appear that the most fatal ravages took place rather in close sultry weather, or immediately afterwards, and that it vanished after thunder storms and heavy rains. Dr Tytler has written many pages to prove that it is caused by diseased rice, the growth of an unfavourable season. Dr

Ranken, who wrote an interesting paper on cholera, in the 19th vol. of the Ed. Med. and Surg. Journal, attributes the disease to the conjoint operation of sudden changes of weather, humid soil, and damp atmosphere, in connection, more especially, with a diet of rice and other grain, vitiated by the wet of the season. Many others have attributed cholera to the heat of the climate, but this is not likely; it appears to be rather attributable to sudden cold in hot weather. It has been stated in another part of this work, that cold acts upon the body in the production of disease, not according to its intensity, but to the previous temperature of the body itself to which the cold is applied, and upon the whole, I feel disposed to regard Dr Ranken's theory as approaching nearest the truth; although Mr Marshall states, at page 191. of his work already quoted, that "cholera did not generally prevail among the troops in proportion to the degree of exposure, or alternations of weather to which they are liable, or to the privations under which they suffered." It is a disease, however, which appears chiefly to have attacked natives, and that British officers were singularly exempt from its influence. It is also admitted on all hands, that the disease, generally speaking, does not become so rapidly hopeless in European constitutions, as among the natives; which so far confirms Dr Ranken's notions.

Appearances on Dissection.—"The blood vessels of the brain, (says Dr Kellie,) are generally found turgid with blood, and in some instances, an unusual quantity of serum effused in the ventricles. The lungs appear to be *overloaded* with blood, and the heart itself seems distended with coagula. In the abdomen, *both the veins of the omentum and mesentery* are *turgid with blood.* The intestines are outwardly red, and inwardly they are covered with a thick subalbid mucus; the stomach has often a similar appearance, and its internal coat sometimes shows red spots.

Constrictions also both of the pylorus and intestines, are to be seen in some few instances. The only other appearance worthy of remark, mentioned by Dr K. is, "that the bladder

is in almost all cases empty, very much contracted, having more the appearance of a virgin uterus than a bladder."

My friend Dr Badenach, when surgeon of the 59th Regiment in India, saw the following appearances on dissection: "The stomach of a scarlet colour, blood vessels of the intestines and omentum loaded with blood. In one instance, the vena cava was distended to a very great size. Either the spleen or the liver, or both, are exceedingly gorged with blood. In some cases, the vessels of the head have displayed signs of accumulation."

The following appearances were observed in a Sepoy, by Mr Whyte, on dissection.

"An enormous distension of the stomach and bowels, not from air, but from a gelatinous substance; little sanguineous turgescence on the surface of the organs, but an absence of the moisture and glossy character of health; the liver much enlarged from the quantity of blood contained in its vessels, and on one part of its convex surface, a considerable extravasation of blood; the gall bladder filled with bile, and projecting beyond the edge of the liver, the bile of a very dark colour, and the gall-ducts pervious. The contents of the small intestines were dark coloured, apparently from an admixture of bile; the contents of the large intestines resembled the white albuminous matter that was discharged before death. The urinary bladder was quite empty, and wholly shrunk into the pelvis, the kidneys apparently diminished, the lungs so much collapsed, as hardly to fill one half of the cavity of the chest, no fluid in the pericardium.

"In the European subject, the appearances were the same, with these two exceptions, the stomach and intestines were distended with flatus, instead of with gelatinous fluid, and hence collapsed upon puncturing them; the veins throughout the outer surface of both, as well as the mesocolon, were turgid with blood."

The following account is given of the appearances found on dissection at Bombay.

"Not a single thoracic or abdominal organ was to be traced unmarked with vascular rupture, or turgescence of black blood,

or unstamped with some other morbid appearance; the stomach and liver, however, were chiefly affected, and the urinary bladder was always shrivelled. The blood, when drawn from the arm, was found to coagulate very loosely, and sometimes not at all, and the arterial and venous blood were of a like purple hue."

At Ceylon, the following appearances were observed by Mr Marshall. "In cases that terminated rapidly, the blood-vessels of the membranes of the brain were generally found unusually tinged. The dura mater presented a greater number of bloody points than is commonly observed. The increased turgidity of the blood-vessels of the pia mater, was still more remarkable than in the dura mater. When the former membrane was removed from the convolutions of the brain, it appeared at a little distance like a coagulum of blood. The plexus choroides, and velum interpositum, were likewise unusually vascular. In protracted cases, no very unusual turgescence of the blood-vessels was observable.

"*Thorax.*—The lungs were frequently found gorged with blood. The right side of the heart, and the venous trunks, were often unusually filled with blood, sometimes the heart was more flaccid than natural.

"*Abdomen.*—When cases ran a rapid course, the intestines, viewed *in situ*, appeared remarkably white and bloodless. In protracted cases, they were frequently reddish. The villous coat was often particularly vascular. Some cases occurred, where the vascularity was so great, as to resemble a successful injection of the intestines with fine size-coloured reddish brown. There was, however, no thickening of the coats of the intestines.

"The stomach and intestines generally contained more or less of a turbid, watery, congee-like substance. Sometimes flakes of a tenacious mucus were found floating in the fluid. The villous coat was for the most part covered with a thick layer of adhesive mucus.

"*Liver.*—This organ did not present any morbid appearance. The gall bladder always contained more or less bile. In quality this secretion was found possessing all the different shades

of colour and consistency, between pale and watery, to black and pitchy."

Pathological Remarks.—We have no account of any disease creating such ravages in so short a space of time, since those recorded in holy writ. An opinion has been too prevalent, that the disease, even as it occurs in this country, depends upon the state of the bile, and particularly of an overflow of that secretion; but my belief is, that this pathology is erroneous. Another prevalent opinion is, that the disease is one of inflammation, but it is certainly not correct, although it frequently follows in the train of consequences. The first thing which occurs in viewing the disease itself, and the accounts which have been given, is the irregular determination of blood, which leaves the surface of the body quite pale. As in the cold stage of intermittent fever, many people have exhausted their ingenuity in abortive attempts to discover the cause of this phenomenon, instead of inquiring into the effects produced. The first point of inquiry ought to be directed to discover what has become of the vital fluid? This is most satisfactorily answered by the numerous dissections which have been recorded by different individuals. The balance between the arterial and venous systems is lost, and the blood becomes congested in the latter. In the majority of cases, the liver and mesenteric veins shew most engorgement; but in some cases which occurred at Ceylon and other places, the venous system of the brain was congested, and the liver was quite free. Thus, Dr Johnson informs us *, that some of Mr Finlayson's patients died after a few hours, without any signs indicating cholera, except diminution of strength, and the following marks were found on dissection. Much congestion of the brain, presenting layers, as it were, of black coagulated blood, or covered with general ecchymosis. In some cases, abundance of blood of the same colour flowed both from an incision into the brain, and from the sheath of the spinal marrow.

In some cases, the liver has been ruptured from the impetus of blood. Another circumstance worthy of remark, is the

* Medico-Chirurgical Review, Anal. Series, No. 3.

general absence of bile in the intestinal tube, as well as the suppression of urine. The general torpor which prevails, and which comes on so suddenly, may be fairly attributed to the congested state of all the vital organs. The spasms and cramps which take place, may be also partly attributed to the same cause. The state of the blood deserves also to be noticed; it is thick and very dark-coloured when drawn from a vein. Almost all writers notice this, even at an early period of the disease; and I beg particularly to refer to the valuable cases published in Mr Annesley's work already quoted, and to his pathological observations at page 126.

The dark and pitchy appearance of the blood, when drawn from a vein, is not peculiar to this disease: it is seen in the cold stage of intermittents; I have seen it in the cholera which prevails in this country; and it is also observed in many of the cases of fever which are called congestive. It shews, I imagine, that the lungs suffer very much from congestion early in the attack. "The lungs (says Mr Annesley) were generally shrunk, collapsed, filled with black blood, heavier than natural, and of a fleshy, hepatised, or bruised appearance." In fact, all the functions of the body, in this disease, seem to be impeded or destroyed, except that of the mucous membrane of the stomach and bowels, which appears to be engaged in secreting and discharging an immense quantity of serous fluid; this must be regarded as one of those efforts of the constitution which we see so frequently in operation to save life.

Treatment.—The method of cure may be very shortly summed up. In the *first* place, we have to endeavour to re-excite the heat of the surface by all possible means which can be resorted to, without moving the patient much, and to restore the lost balance of the circulation, by opening a vein as quickly as possible. The great majority of Indian practitioners agree in these two particulars, and that if they can get the blood to flow, it gives the patient the best chance of life; but I fear too little attention has been paid to the period when the blood is taken. Although it affords the greatest chance

of safety in the first stage, which extends only, I imagine, to an hour, or at most two, from the first moment of attack; it is death in the last stage, after the body has not only been weakened by the continuance of the congestion, but by excessive evacuations.

"I beg to give my testimony (says Dr Daun) in favour of bleeding in the treatment of that very fatal disease. So far as my experience enables me to form an opinion, bleeding, *early and copious bleeding*, is the only means of cure yet discovered on which any reliance should be placed." At another place, he states, that "in the cases successfully treated by bleeding, it was remarked that the pulse, though feeble and intermitting when the vein was opened, became stronger and more equal in its pulsations as the blood flowed. The patients also expressed their receiving the greatest relief from the bleeding. In two cases, the pulse, about 20 or 30 minutes after the first bleeding, (which was to the extent of 32 oz.) began to sink again, and to intermit, and the cold perspiration and indescribable anxiety peculiar to the complaint, to return. The vein was in both cases again opened, and greater relief was discovered from the second abstraction of blood than from the first; an equal or even larger quantity being lost by the second than by the first bleeding."

"In every case of cholera, (says Mr Donaldson in the Reports,) when the patient applied in time, and the arterial action was sufficiently strong to admit of venesection, I took from 12 to 16 oz. of blood from the arm, and it was *invariably* followed by mitigation of all the symptoms: the spasms disappeared, and the subsequent alvine evacuations were generally bilious," &c. "In those cases where collapse had taken place, bleeding was of course inadmissible," p. 168.

Dr James Johnson claims the credit of being the first who recommended the use of the lancet in this disease.

Stimulants of the strongest kind are to be given, even in the first instance, with a view of hurrying the circulation, enabling us to obtain a flow of blood; and they are more necessary afterwards to support the strength, particularly when bleeding is inadmissible. If the venous conges-

tion is removed by these means, the evacuations will cease, and we shall then have to give the constitution further assistance, by allaying the irritability of the nervous system, which is done by opium.

Care should be taken to assist in restoring the functions of different organs; and this will perhaps be best effected by the exhibition of moderate, but frequently repeated doses of calomel and opium.

In conclusion, I have to remark, that after the first danger has subsided, two things have to be attended to. On the one hand, to support the strength by proper means, and, on the other, to be on our guard to counteract local inflammation, not only in the brain and liver, but in the lungs and bowels, which last is best effected by the application of leeches and counter-irritation. "In every case of recovery (says Dr Daun in the Medical Reports) from spasmodic cholera, a state of re-action has followed the asthenic state," p. 272.

The close resemblance between the symptoms of cholera, as it appears in this country, and those of poisoning from arsenic, are so well known, that it is one of the points which the counsel for the prisoner labours to prove. In a late trial for poisoning with arsenic, I stated in my evidence, that it was not an uncommon thing for cholera to prove fatal, even in this country, in two or three days. Professor Christison, who also gave evidence upon the same trial, was pleased, in his journal, to make some indelicate and erroneous strictures upon my statements. With regard to this point he has stated considerable doubts, and quotes Drs Abercrombie, Duncan jun. Home, and Alison, as having never seen a fatal case in two days, "*so that* (says he) *Dr Mackintosh's opinion, as to the commonness of such an event, appears more than problematical.*" The only observation which I shall now make upon this very rash assertion, is, that all these gentlemen, except Dr Home, have actually seen the very event which he has stated they did not see. Several such cases have since been reported to me; and it is to be hoped, that Dr Christison will hereafter be more correct in his own statements,—be less pertinacious, and treat the statements of men of experience with a little more

respect. Dr Christison's talents are respectable enough, and his zeal and assiduity are worthy of great praise; but, like many others, he has been rendered overbearing by being made a Professor when yet a boy in science.

Dr Christison, who has now the chief command of a journal, should be very careful how he puffs himself; and, above all, he should avoid every thing which has an appearance of wishing to depress another. Such selfish conduct, on the part of medical reviewers, has in many instances deprived them of the confidence and esteem of the public; and, as Shakespeare says, "'Tis time to give them physic, their diseases are grown so catching." But as Dr Christison has neither added to his reputation, nor increased the number of his friends, by his conduct on the occasion alluded to, I shall drop the subject, after informing him, that Sydenham, in treating of the symptoms of cholera, which prevailed in London in the year 1669, states, that they "often destroy the patient in twenty-four hours," (Swan's Ed. p. 147.) I also beg to subjoin the following case of cholera, which proved fatal in Dublin in thirteen hours.

"Private Dickie, 26th Regiment, aged 19, was brought to the hospital on 13th August 1826, in a state of great exhaustion, labouring under violent vomiting and purging, with which he had been attacked about an hour previously. He is also affected with severe spasmodic action in the bowels, and cramps in the legs; the matter vomited is bitter, and has a dark green colour,—that passed by stool, has a dirty grey appearance; face and extremities of a livid hue, cold and clammy; no pulse at the wrist; the action of the heart is very obscure; articulates with difficulty, and moans incessantly; he cannot protrude his tongue; eye-lids half-closed; appears on the point of expiring, and he died before the lapse of twelve hours from the time of his admission, notwithstanding the adoption of the most judicious practice.

"The only probable cause ascertained, is the drinking a quantity of porter before going to bed last night, but not to intoxication *."

* I am indebted to Staff Surgeon Marshall, for the history of this case.

INFLAMMATION OF THE MUSCULAR AND CELLULAR TISSUES.

I scarcely believe that acute inflammation ever primarily affects these tissues. On dissection they are frequently found altered in appearance and structure by inflammation and its consequences, but never, according to my experience, without distinct marks of the diseased action having spread from the mucous tunic. This part of pathology, however, is still open to future investigation, and the subject is merely introduced, to shew that it has not been entirely overlooked, and to mention one symptom which is pretty generally supposed to indicate the existence of inflammation of the muscular coat, but more particularly to notice chronic inflammation, with thickening, induration, and consequent permanent constriction of the bowels.

It has been repeatedly observed by all writers, and has been shewn in this work, that in pure peritonitis the bowels are rarely difficult to be moved by the exhibition of the ordinary remedies; and that in inflammation of the mucous membrane, there is generally diarrhœa. Now the peculiar symptom to which I have alluded, when the muscular coat is in a state of inflammation, is obstinate constipation. Provided a practitioner is aware that inflammation is going on in the abdomen, it is really a matter, comparatively, of little consequence what tissue is primarily affected; and it will be almost invariably observed in practice, that those who are most apt to draw minute distinctions, are men of weak understandings.

It is often observed on dissection, that portions of the alimentary canal are thickened and indurated, and contracted in proportion to the thickening. The parts most frequently found in this state are, *first*, the point of junction between the stomach and duodenum; *secondly*, the point of junction between the ileum and cæcum; *thirdly*, the termination of the sigmoid flexure of the colon, or some part of the rectum; and *lastly*, the whole extent of the colon. In all these situations, the peritoneal coat is generally found sound, and the mucous membrane is also sometimes observed to be in no other degree affected than being puckered; so that I am led to conclude, that although the muscular coat and cellular tissue are

not so liable to be primarily affected with acute inflammation, yet they are frequently the seat of chronic inflammatory action. It must be confessed, however, that there may be some deception here, as the inflammation may have extended from the mucous membrane to the subjacent tissues, as it has been shewn that the former is capable of restitution, even after it has been in a state of extensive ulceration. The cellular membrane of the intestines, is more frequently found to be the seat of thickening than the muscular tunic; but occasionally we see the muscular fibres very much enlarged and thickened, in the state that has been denominated hypertrophy. This thickened condition of the coats of the alimentary canal, which is produced by an effusion of lymph, has been too often confounded with scirrhus and cancer; and many people are still too much in the habit of calling every structure in the body scirrhus, which is ascertained to be harder than natural.

In general, it is impossible to determine by the symptoms, whether the parts are in this condition or not, except the contraction is within reach of the finger, at the lower part of the bowel, or is situated about the termination of the sigmoid flexure of the colon, which will frequently give a particular form to the stools. When the thickening has been situated at the pylorus, the symptoms were those of indigestion, attended with most uneasiness after food had been many hours in the stomach, and when it might be supposed to be in a state of preparation to pass into the duodenum. When it has been situated in the ileo-cæcal valve, or in the course of the colon, constipation, distension of the abdomen, with frequent threatenings of ileus, have been remarked, together with pain in the situation of the caput cæcum.

In one case where the colon was affected, the hardness could be traced during life throughout the whole extent of its track. When the termination of the sigmoid flexure, and the rectum, are the seat of the disease, besides constipation, the history of the case and the state of the stools will lead us to suspect the existence of this morbid condition of parts. In addition to the constipation, we shall find that there has long been inclination to considerable straining when at stool, which

has gone on increasing, so as to induce the habit, which has at last become inveterate, of sitting and straining for a very considerable period, before a moderate discharge of feces can be procured, and after all, the person rises dissatisfied with his efforts, and with a full, loaded sensation in the belly. Under such circumstances, when the evacuation from the bowels is of the ordinary degree of consistence, the feces have a very peculiar form, being either of a worm-like shape, or flat and tape-like. The only cases which are capable of being cured, are those which are within reach of a common bougie, in the rectum, or low down in the sigmoid flexure of the colon. With respect to the contractions in the other parts, much may be done by attending to the diet, and to the state of the bowels; and to prevent the parts from running into a state of true scirrhus or cancer, the occasional application of leeches and blisters are to be had recourse to, and every cause is to be avoided which can irritate the parts, particularly that produced by drastic purgatives.

Scirrhus of the Stomach and Intestines.—In the last article, simple induration was described, affecting various parts of the alimentary canal, in which the tissues were not confounded, but merely in a state of hypertrophy, and owing, it is conceived, to chronic inflammation, attended by new deposition. In true scirrhus, on the other hand, there is a thickening of parts, with disorganization, so as to confound the different tissues. It is supposed by Meckel, and other pathologists, that scirrhous degeneration commences in the tissue which encloses the vessels, and the mucous glands, from whence it extends itself so as to involve the mucous and the muscular coats, destroying their natural appearance, rendering them thicker and harder, and terminating at last, if the patient lives long enough, in carcinomatous ulceration.

Notwithstanding the great attention which has been paid by many eminent men to the formation of schirrus, yet it is still involved in mystery. It will be found, however, to be a prevalent opinion, that it depends upon chronic inflammation, of a specific nature, which has a tendency to the formation now under consideration; in the same manner that

long-continued inflammation in gouty subjects, being of a specific character, has a tendency to deposit calcareous matter. It is interesting, however, to know, that the serous coat of the stomach and bowels is the last part affected, so that on dissection it is found either quite healthy, or only slightly thickened or opaque-looking, still preserving its natural gloss; if there are traces of inflammation, they will be observed to be recent. In two preparations only, which I have had an opportunity of examining, have I seen tubercles projecting from the serous coat, while the other structures were affected with schirrus; one of these, a cancer of the stomach, is now in my museum. There is always a difficulty in examining an indurated part with a view to ascertain the state of the vessels; but I think I have seen the veins much thickened in their proper coats, not in the part itself, but in the sound texture in its vicinity. In the soft cancer, which particularly affects the stomach, I have repeatedly seen vessels, supposed to be veins, thickened and enlarged, and on two or three occasions, a white fluid like cream was distinctly traced till the vessel disappeared in the diseased mass.

Scirrhosities are most frequently found in the situations enumerated under the last head, viz. the pylorus, the caput cæcum, and in the course of the rectum, which may be attributed so far to these parts being more exposed than others, to be irritated by the substances which have to pass through them. Schirrosities may also, however, exist in other parts, more particularly near the cardiac orifice; very often they are extensive, so much so as to involve the whole of the stomach, and sometimes a large portion of the intestine.

Fungous excrescences, of a cancerous nature, are rarely met with in comparison to the scirrhous indurations, nevertheless they have been found in every part of the alimentary canal, and were probably denominated polypi by the older writers. Brechet has lately described a case, which appears to me to be of this kind, under the name of polypus, which extended from the cardiac orifice into the duodenum. This kind of affection is noticed in Professor Monro's excellent work on morbid anatomy of the gullet, who has denominated it the melt-like cancer. It certainly so far answers the description, because it is white and soft; but being fibrous, cannot be

washed away or softened down like a melt; it rather resembles a young placenta well macerated. Cancerous excrescences are also sometimes found in the rectum. Meckel says they are more frequently seen in this part of the bowel than any other; but they differ considerably from those found in the stomach, which are more soft and spongy, and less pendulous.

Symptoms of Cancer of the Stomach, &c.—In the early stages it cannot be distinguished from dyspepsia; and sometimes even to the very last the symptoms are not more severe. There is a preparation in my museum, shewing a section of the stomach, more than half an inch thick, exactly like fibro-cartilage; and although the whole stomach presented the same appearances, the symptoms were those of ordinary dyspepsia. In general, however, there is great emaciation, restlessness, fever during the night, thirst, sallow colour of the skin, and shooting pains extending in different directions from the part affected. In scirrhous or cancerous affections of the stomach, we are generally able to tell whether it is the cardiac orifice, or the pyloric, which is principally affected; if the former, pain is experienced in attempting to swallow as soon as the article gets low down in the œsophagus, where it is felt to lodge; frequently the patient is obliged to force it up by eructation, from the pain excited by its presence, but which ceases as soon as the food passes into the stomach. The pain is sometimes so great, that patients put off eating till nearly famished; and some have described to me, that they experienced as much difficulty in introducing a table-spoonful of milk, or any other fluid, as from a mouthful of solid food. But when the disease is situated in the body of the stomach, the food may pass readily in, but occasions so much suffering, that the patient is obliged to discharge it by voluntary efforts to vomit; sometimes a considerable quantity of serous fluid is discharged by eructation, as in water-brash. When the pylorus is affected, it will be found that the uneasiness does not become very great for some time after taking food, particularly if motion is avoided; but at length the pain becomes intense; nausea is excited, and the only temporary relief for the unhappy suf-

ferer, is to get rid of the offending matter by vomiting. On some occasions, there is ardent thirst and burning pain, and the patient describes as if he felt his stomach corded to the spine; and when he changes his posture in bed, he feels the stomach falling from side to side, in the same manner that a woman for some days after delivery feels the uterus. In all cases the pain is increased, more or less, on pressure; and in some the induration may be felt, but only, I imagine, when the whole stomach, or a considerable portion, is affected. In one case the stomach was felt by myself and others at the umbilicus, and the woman herself placed our hands upon it; but in that instance the whole stomach was indurated, in some places thickened to the extent of more than an inch, with such a diminution of its cavity, that it would scarcely hold six ounces of alcohol thrown in, after it was removed from the body, in order to distend it.

Cancerous affections about the head of the colon and the rectum, but particularly the former, are apt to give rise to symptoms of ileus. There is in general great irregularity of the bowels; sometimes they are constipated; at others diarrhœa prevails. The evacuations are more than usually fetid, and there is pain of a shooting character in the situation of the disease. If in the caput cæcum, there is frequently considerable fulness and increased tenderness on the application of pressure: if the disease is confined to the rectum, frequent tenesmus and excoriations about the anus may be expected, together with considerable discharge of bloody-looking matter when the disease is far advanced.

Causes.—The disease appears to our senses to be produced by accidental causes; but it is probable, that as pathology advances, it will be found to depend upon some other circumstances, perhaps upon original formation, either independent of, or connected with, specific action in the capillary arteries or veins. The woman from whom the stomach was taken which was so much indurated, had been for many years a notorious dram-drinker; she attributed the commencement of her complaint, and I believe truly, to a blow received eight months before her death, in the region of the stomach. A

gentleman, who had a large cauliflower excrescence in the stomach, had been all his life fond of good eating and drinking, and perhaps rather indulging in these respects; yet he was strong and healthy, and had no complaint till he received a fall from his horse one night when returning home from a jollification, he pitched upon his shoulder, which sustained such a contusion, as induced him, I believe for the first time in his life, to seek for medical advice. The doctor purged him well with drastic medicines, till he made the poor man really sick, and then, being resolved to make a good job out of a bad customer, he discovered some obscure disease of the liver, and as he knew mercury to be a remedy for affections of that organ, he mercurialized him well, so much so, that he kept up a salivation for many weeks. During this period, the patient felt for the first time that he had a stomach; his appetite was impaired, and as the doctor knew that tonics were good for that, he sent many bottles of such drugs. Bark, steel, and bismuth, were at last had recourse to, but, alas! the patient got weaker and weaker; the doctor grew tired of his patient, and the patient dissatisfied with his doctor, so that they parted, as it were, by mutual consent. Some time after this he fell under my care, and the symptoms were so decided of scirrhus of the stomach, that I had not the slightest hesitation in giving my opinion to that effect.

The history of both these cases was quite distinct; and a great many such could be quoted, in which the commencement of the affection could be traced to a particular cause; but it would be a pathological error to assert, that the disease in the one case was owing to the blow; or in the other, to the specific action of mercury.

Treatment.—Although no means hitherto devised will cure such carcinomatous affections, yet a great deal may be done in the way of mitigating suffering and prolonging life. The chief thing to be attended to, is, to avoid eating any article which is likely to produce irritation. In very bad cases, patients have been much benefited by ass milk, and have even recovered considerable flesh and strength under its use; thin arrow root and gruel are to be tried; if ass milk cannot be pro-

cured, fresh whey, with or without an addition of cream, is to be substituted. If the body still emaciates, additional nourishment may be thrown into the rectum, in the shape of beef tea, mutton broth, &c. The bowels must also be attended to; and the best manner of doing this is by an injection of senna and castor-oil, administered every second or third day, as may be necessary. If the patient is teazed with vomiting, and worn out by pain, the most likely method of allaying both, is to exhibit small but repeated doses of the sedative solution of opium, which, after trying every other means, I have found to be the best. Should the pain, however, still persist, a few leeches may be applied; or if the patient is very weak, counter-irritation is to be produced, with the ointment of the tartrate of antimony. Frequently, when the patient feels a little better after this treatment, his relatives will be found anxious to force nourishment upon him, in the shape of beef tea, animal jellies, and even wine; but they never fail to produce an increase of suffering in severe cases; therefore physicians should be particularly careful to impress the friends with the necessity of attending strictly to the regimen which has been prescribed.

CHAP. VI.

DISEASES OF THE LIVER AND SPLEEN.

In this chapter, I shall treat of Inflammation of the Liver; Abscess; Tubercular Formation; Scirrhus; Jaundice; and Gall-Stones; and also of Diseases of the Spleen.

INFLAMMATION OF THE LIVER.

Inflammation of the proper substances of the liver is comparatively of rare occurrence; that it does occur, however, there can be no doubt; but I believe that inflammation of the peritoneal coat of this organ is more frequently the seat of disease, and that it is also often confounded with functional and structural derangements in neighbouring organs. I have seen some remarkable cases of this within these few years. One dissection revealed pericarditis, another inflammation of the inferior lobe of the right lung, and a third a collection of matter in the thorax; all of which had been mistaken during life, and treated for hepatitis by sundry courses of mercury.

The liver, like other viscera, may be affected with inflammation in various degrees of intensity and extent of surface, which will give rise to symptoms of corresponding severity; but it will be sufficient to describe the acute and chronic hepatitis.

Some are of opinion that acute hepatitis is an inflammatory

condition of the hepatic artery and chronic, of the vena portæ; whereas Winslow asserts, that each has its origin in the ramifications of the vena portæ; but it is easier to make assertions than to bring forward good proof.

The truth is, that we are ignorant of the matter; and although an interesting pathological question, yet it does not appear to me to be one of much practical importance, at least in the present state of our therapeutical knowledge.

Symptoms of Acute Hepatitis.—The acute and sub-acute varieties almost always commence with some chilly feelings, succeeded by heat of skin; furred tongue, of a yellowish appearance; irregular state of bowels, the stools being generally costive, like whitish clay, or dark-coloured at first, and assuming the whitish appearance as the disease advances; sometimes there are vomited and passed by stool, considerable quantities of dark-coloured matter, occasionally resembling grumous blood; but this generally takes place, it would appear, when there is great congestion of the liver, and also of the vessels of the mucous membrane of the intestines; the urine is scanty and very dark-coloured; the skin hot, dry, and harsh; some degree of dyspnœa and anxiety of countenance; nausea and vomiting; considerable thirst; the pulse is represented to be quick, strong, and hard; that it is so on many occasions, I admit, but it is often otherwise. In the most acute form, the pain in the region of the liver is severe, increased on pressure, accompanied by swelling and tension of the abdomen; pain is often experienced about the tip of the right shoulder, which is supposed by many to be pathognomoic of an affection of the liver; but nothing is more deceptive. This complaint, whether slight or severe, is liable to be mistaken for affections of the neighbouring viscera, and more particularly of the peritoneum covering both surfaces of the diaphragm, as well as inflammation of the lower lobe of the right lung. These are attended by some degree of cough, which, in many cases of hepatitis, is a marked symptom. A yellow discolouration of the skin, known in common language by the term jaundice, occasionally takes place in hepatitis, as does hiccup; but neither the one nor the other, nor both conjoined, can be said to be

peculiar symptoms. When the inflammation affects the peritoneal coat of the liver, the pain is much more intense, generally speaking, and the fever higher, than when confined to the substance of the liver. Nothing is more unsatisfactory than the result of external examination, made to ascertain the condition of the liver when suspected to labour under disease. The contraction of the muscles of the abdomen; distension of the colon or stomach; disease of the kidneys; a collection of matter in the thorax, pressing down the diaphragm, are all sources of deception; which shews the propriety of placing the patient in such a posture as will relax the muscles of the abdomen, which will be best effected when lying in bed with the head and shoulders well elevated by means of pillows, and the knees drawn up towards the abdomen. In this position, the examination is to be made, after percussion has been employed, which will inform us whether there is any flatulent distension; and the patient should be fasting. He should be told to take a full breath, and pressure is to be made in the region of the liver, while the lungs are yet distended. With all these precautions, little satisfaction will frequently be obtained from the examination, because the right lobe is the part most frequently affected, which is concealed by the false ribs. The stethoscope will afford satisfactory negative information respecting the condition of the lungs.

Symptoms of Chronic Hepatitis.—This disease is very slow and insidious in its progress, and uncertain in its termination. There is a dull dragging pain in the right hypochondrium, increased by any considerable exertion, attended occasionally with feverish symptoms, and a dry, parched skin, irregular bowels, scanty high-coloured urine, tympanitic distension of the abdomen, sallow countenance, and frequent attacks of jaundice. The pulse is not much affected, perhaps, for some time. On many occasions the patient is cut off from the occurrence of an acute attack of inflammation in a part of the liver which had not perhaps been previously involved in the disease, or from peritonitis or from inflammation of the lungs or pleura. There is also pain in the shoulder, and sometimes a weakness of the right arm; the tongue is scarcely ever free from fur, the appetite

is bad, and an eruption very often attacks the face, and the back, between the shoulders, generally in the form of acne; the patient passes bad nights, although he may be able to attend to his ordinary affairs through the day.

The terminations of acute and chronic hepatitis are very various, such as adhesions to surrounding parts, softening, hardening, enlargement, abscess, shrivelling, tubercular formation. Mortification, I believe, is unknown; it is often mentioned particularly by the older writers, who called every thing which was dark-coloured and softish, either putrefaction or mortification. The liver is liable also to considerable changes of colour; if there has been high action, it will look red and more vascular than in the ordinary state; if there has been much venous congestion, it will have a darker colour; or it may be preternaturally white, without any alteration of structure. In chronic inflammation, it is sometimes brick-coloured and variegated green. The granular structure of the liver, which is best seen by tearing the organ, is also changed by disease; sometimes much increased in size, at others entirely destroyed.

When an abscess exists, it sometimes bursts into the thorax, sometimes the matter has been known to be discharged through the lungs and bronchial tubes,—at others through the parietes of the abdomen, and into the intestinal tube; but few recoveries take place after either of these events. The patient dies in the acute disease from the rapid destruction of the organ itself, and frequently from the extension of the inflammation to the neighbouring parts. In the chronic disease, the patient generally sinks after the occurrence of dropsy.

Causes.—There can be no doubt that the disease is more frequent in warm climates than in this country, and still more so in the East Indies than in the West; which shews that heat alone is not a specific cause of hepatitis. Indolence, along with full living on high-seasoned food, and a neglected state of the bowels, are the principal causes, I imagine, of hepatitis in all climates; and when to these are added high temperature, atmospheric vicissitudes, and constant and copious perspiration, it is no wonder that the disease should be very

prevalent among Europeans in India. In this country, dram-drinking is an alleged cause; but in my experience, this pernicious habit produces disease of the stomach more frequently than of the liver. A congested state of the vessels of the liver must also tend to produce inflammation of its substance; hence it often succeeds to intermittent and remittent fevers. Various other causes have been assigned; but for these, and for many valuable observations, the reader is referred to the various works published by Indian practitioners. In this country, my experience leads me to believe that women are more liable to disorders of the liver than men; and it is known to be a frequent consequence of disease of the lungs, as seen in phthisis.

Treatment.—The more intercourse I have with intelligent practitioners who have been in India, the more I am convinced that the action of mercury is too much trusted to, to the neglect of the lancet, and particularly to local bleeding; and that drastic purgatives are too much in use. Therefore I would recommend the lancet, in the early part of the disease, to be used with decision; but if it is too far advanced, the application of leeches may be trusted to, together with gentle laxatives, frequently repeated, assisted by injections. I have also a high opinion of the long continued application of counter-irritation; but to act beneficially, it must be persevered in, and assisted from time to time by local abstractions of blood. Occasionally the solution of tartar-emetic may be given, if the stomach is not already in a too irritable condition, mercury is to be used, as a powerful assistant to these means, rather than as the principal remedy; perhaps it may be found in such cases to be more useful in restoring the proper functions of the liver, after diseased action has been reduced, than in reducing that action itself. The warm bath is to be frequently employed. The diet should be of the blandest description, and the patient must avoid hard exercise, particularly on horseback, for a considerable time after his convalescence.

When the disease is severe in India, removal to a colder climate is considered very essential, and wonderful recoveries have taken place during the homeward sea voyage.

It must not be supposed that I have joined the standard of those, who pertinaciously resist the employment of mercury in all diseases, and who insist that every little eruption, or accidental disease of a bone, or chronic ulceration of the throat, is produced by the action of mercury, although the individual may not have taken a grain of it for twenty or thirty years.

Mineral waters, as those of Cheltenham and Harrowgate, are found exceedingly useful in diseases of the liver, as also the nitro-muriatic acid bath; and I think benefit has been derived from the use of iodine, but it becomes me to speak doubtfully respecting this last remedy. Chronic Hepatitis, and other diseased states of the liver, are to be treated pretty nearly upon the same principle, excepting drawing blood from a vein, which is rarely called for; whereas the action of mercury is likely to be more beneficial than in the acute forms of the disease.

I have only a few words to say respecting tubercular formation, and scirrhus of the liver. The true scirrhus of this organ is, I imagine, as rare as mortification; and as mortification is often mistaken for a congested appearance, so is scirrhus for tubercular formation. Generally speaking, tubercular formation may be traced extending from the peritoneum into the substance of the liver; the peritoneum having a thickened, opaque, and puckered appearance, occasionally contracted inwards, so as to give a resemblance of loss of substance from the discharge of an abscess, together with cicatrization. On some occasions, the tubercular masses project from the surface of the liver, producing a lobulated appearance. Sometimes, however, the peritoneum looks perfectly healthy, although there may be considerable enlargement of the organ itself; and when cut into, large tubercular masses are discovered, sometimes near the surface, at others deep seated, which look yellow, and resemble the general tubercular infiltration which takes place in the lungs. The whole liver is sometimes converted into a diseased mass, the surface of which looks of a mottled green, with projections from its surface, of different sizes; a section produces a thick tenacious bloody exudation, and when wiped away, leaves the surface of a curious variegated appearance, containing spots, some the size of a half-

crown, others smaller than a sixpence, of a yellow colour, streaked with red and white lines, each spot appearing to have a distinct centre, with red and white lines running towards the circumference. In a case of this kind, of which I have drawings, the cystic duct was destroyed, the gall bladder much distended with dark-coloured viscid bile, and its coats greatly thickened. Sometimes the peritoneal coat only is studded with tubercles of the miliary kind, in various degrees of progress, some being quite vesicular, and others crude.

A preparation of a diseased liver was presented to me some time ago, in which there was a large effusion of lymph thrown out between the diaphragm and the liver, with adhesions round the edges, which looked exactly like a tuberculated liver before it was minutely examined.

Cysts containing hydatids are sometimes found in the substance of the liver, sometimes two or three in number, containing immense quantities of these vesicular bodies, the nature of which is not known; but after an attentive consideration of the whole subject, and a minute examination of the bodies themselves, I think at least they are not animals, but ought to be regarded as diseased products like tubercles.

JAUNDICE.

It has been already stated, that jaundice is not an invariable attendant on hepatitis. It would seem to depend upon disease of the biliary ducts, perhaps inflammation; but we positively know, that it is occasioned sometimes by obstructions of various kinds,—as thickening and obliteration of the duct, and during the passage of gall stones. I have also seen jaundice, in cases where no morbid appearance could be discovered after death. It must be confessed, however, that much is to be done, both in the physiology and pathology of the liver. Jaundice may be produced by one or other of the following causes; diminished secretion of bile, greatly increased secretion, viscidity of the bile itself, acute and chronic diseases of the liver, inflammation and obliteration of the biliary ducts, obstruction from gall stones, and possibly, spasm of the ducts.

Phenomena.—Sometimes jaundice takes place, as has already been stated, as an occasional symptom of hepatitis; but sometimes it occurs suddenly in cases where there could have been no acute action, or disorganization of any kind, and preceded by languor, some degree of restlessness, diminution of appetite, and other symptoms which attend indigestion, nausea, occasionally vomiting, dull pain, or sense of weight in the right hypochondrium. The tongue is generally furred and yellow; the urine of a deep yellow, sometimes tinged green; bowels slow, and the evacuations whitish. The tinge of the skin is sometimes preceded by a tingling or itching of the whole body, and the colour of the surface is various, from that of citron, almost to black. The conjunctiva of the eye also partakes of the colour. Occasionally there is some fever, and the nights are disturbed. Jaundice sometimes comes on insidiously; at others, suddenly. Thus I have known a man to sit down to dinner in tolerably good health, and to be soon obliged to retire, from feeling indisposed, with his whole surface suddenly tinged; the first circumstance which announced it, was a remark which fell from himself, that the table-cloth was of a greenish colour. This observation leads me to remark, that I have known several individuals who saw every object discoloured.

Treatment.—The treatment of jaundice is not well understood. But when it accompanies diseases of the liver, it must be treated as a symptom of such condition; if it seem to proceed merely from functional derangement, the warm bath, emetics, continued laxatives, are to be employed, together with a gentle course of mercury. If there is pain, the application of leeches may be necessary, conjoined with counter-irritation. Great attention must be also paid to the diet, which may be more or less antiphlogistic, according to the urgency and duration of the symptoms. The nitro-muriatic acid bath has appeared to be serviceable in many cases.

GALL-STONES.

As long as gall-stones remain in the bladder, they seem to be productive of little annoyance. I once found two hundred

and forty in the gall-bladder of a subject, whose history was not known; but on several occasions, I have met with them after death, in which no suspicion of hepatic disease had existed. Sometimes there is only one calculus, which fills, or nearly fills the gall-bladder; and I owe a very splendid preparation of this kind to the kindness of Dr Combe and Mr Cheyne of Leith.

Gall-stones create pain, it would appear, only when they are in the act of passing towards the intestine. Under such circumstances, the patient is seized with violent paroxysms of pain, during which his sufferings appear to be as great as any human being can well endure; he ascribes his sufferings to spasms. The abdomen is sometimes painfully distended by flatus; it is very curious, however, that the pulse frequently remains quite natural, although sometimes it is rather accelerated.

Treatment.—We have to direct our attention, in this case, to moderate symptoms. Sometimes bleeding will be productive of relief; in others, it does not seem in the least to mitigate the patient's sufferings, but I conceive it to be good practice to open a vein, in a strong, plethoric individual. The warm bath, and hot fomentations, are to be frequently employed. Large doses of opium are to be exhibited, and the bowels must be carefully attended to. It may be also mentioned, that leeching and cupping may be used if necessary.

SPLENITIS.

It is not easy to determine when the spleen is inflamed, indeed I would almost say impossible; for when found diseased on dissection by myself on many occasions, there have been no symptoms during life, which could be said to indicate disease of this organ, more than any other in the abdomen; nor is this matter likely to be discovered, until we know more of its physiology. It is occasionally found diseased in this country, but still oftener in warm climates, more particularly in situations where intermittent fevers prevail. It has been known to weigh above eight pounds; it is sometimes hard, but most generally we find it, when diseased, soft like a coagulum

of blood. The spleen, like the liver, is also subject to the formation of tubercles, both in its substance and capsule. In two or three cases of tuberculated spleen, which were examined minutely, I found them almost spherical, the tubercular matter being contained in a sac.

Some time ago, a preparation was presented to me, of a large abscess in the spleen, the walls of which were partly formed by the stomach and diaphragm. In the centre of the abscess, a portion of spleen, the size of a large nut, was found quite detached. In the thorax, the pleura covering the corresponding part of the diaphragm was inflamed, and the inferior surface of the right lung adhered. In this case, there were no symptoms to shew that the spleen was affected.

Inflammation of the spleen is *said* to be recognized by heat, fulness, and tenderness in the proper region, with pain on pressure; for instance, Cullen has given the following definition: "Pyrexia, tension, heat, tumour and pain in the left hypochondrium, increased by pressure, without any signs of nephritis."

Discharge of livid blood from the stomach and bowels has often been observed during life, in cases where extensive disease of the spleen was afterwards discovered on dissection; but the same thing happens from other causes.

Treatment.—In India, it is alleged, the native doctors produce constant irritation, by acupuncture and scarifications.

General and local bleeding, the warm bath, laxatives, and blisters, are to be had recourse to, as the urgency of the symptoms demand. Pain is to be allayed by opiates *.

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* In proper order, diseases of the Pancreas ought now to be described; but as affections of this organ are obscure, and as I am not aware of any symptoms by which they can be detected, I shall take the liberty of passing on, particularly as the subject has never engaged my attention.

PART III.

DISEASES OF THE ORGANS CONNECTED WITH THE RESPIRATORY SYSTEM.

CHAP. I.

GENERAL REMARKS.

In approaching the subjects which are to be treated of in this and the subsequent part of the work, I gladly seize the opportunity of expressing the greatest admiration of the talents and powers of observation of the late M. Laennec, and of acknowledging that he is the individual of this age to whom the science of medicine stands most deeply indebted. I know not which to admire most,—the extreme patience with which he carried on his investigations in diseases of the chest, or the zeal and tact which he displayed in surmounting all the obstacles which must have come daily in his way.

The diseases of the chest were once the opprobrium of medicine; and although we are still liable to be mistaken, yet by percussion and auscultation, we are enabled to judge correctly of the nature and seat of some affections, which otherwise would be mere matter of conjecture.

It is scarcely more than half a century, since Avenbrugger suggested the probability of ascertaining the state of the organs within the thorax, more perfectly, by percussing the chest with the points of the fingers. M. Corvisaart translated Avenbrugger's Treatise into French, and subsequently brought the practice of percussion into general use and great repute. It must be confessed, however, that percussion is a much less satisfactory practice than auscultation, either with or without the stethoscope, which instrument is the invention of Laennec,

and which is now too well known to require any description in this work.

A great deal of opposition has been made, and many frivolous objections have been urged, against the employment of auscultation, principally by three classes of practitioners. 1*st*, Those who are too well employed, and who have not time to learn any thing new. 2*dly*, Those who are dull of hearing, or devoid of the power of discriminating between sounds which have some resemblance to each other. 3*dly*, Those who are too indolent or too old.

With respect to the first class, I need not say anything, as no observations of mine will improve such medical men, by inducing them to pay more regard to the science than to the trade of the profession. But as to the second class, I have only to observe, that it is too bad for men who are deaf, to decry the employment of a means which is found to be so advantageous in practice; and the only method by which they can be silenced, is for others to state their defect, a task, which, though ungracious, I shall not shrink from performing in respect to those whose statements are likely to influence the too numerous "herd of imitators" in the profession. In this class, there are some who can hear perfectly well, but who, from the want of what is called a musical ear, are incapable of discriminating sounds, in the same manner as some are unable to detect the difference between a hard and a soft pulse, or a full and a sharp pulse; or as others who, from a defect in the organs of vision, cannot see any thing twenty yards distant. Such individuals, then, will never be capable of availing themselves of this additional means of investigating diseases of the chest; but they have no right to prejudice others in the profession, who are perhaps too happy to avail themselves of any excuse which is likely to save trouble. In the third class of objectors, I have placed the indolent and the aged. With respect to the first of these, I have to remark, that the public have not so much to complain of the ignorance of medical men, as their indolence and want of zeal; and it is as difficult for a camel to pass through the eye of a needle, as to make an indolent physician active and zealous; therefore it is not to be wondered at, that they should advocate

the advantages of remaining ignorant. Many of the aged opponents act, no doubt, upon the principle which is observed in old dogs of not learning new tricks. Before quitting this unpleasant part of the subject, it is proper to impress on those who are fond of indulging in sarcasms against the cultivators of pathology, that ridicule is not argument, and that perfection is scarcely to be expected from auscultators, any more than from others in the profession. It is also very unwise in any lecturer to decry auscultation, and to bring forward solitary instances of mistakes made by those who use the stethoscope, or pretend to use it, in the investigation of diseases of the chest; and who have the audacity to instil bad principles into the minds of students, by recommending them to carry the stethoscope in practice, and "pretend to see as far into the heart of a stone as their neighbours." What would be said by these very individuals, if the mistakes made by medical men in practice, were brought forward by those inimical to the profession, in proof of the inefficacy of physic and surgery! I have seen the wrong leg amputated by mistake, and the operation of lithotomy has been frequently most cruelly bungled; yet no one is entitled, from the knowledge of many such facts, to say that surgery is altogether useless, or that there are not some clever surgeons.

Some individuals have stated objections against the use of the stethoscope; they say it requires a life-time to arrive at any thing like perfection. I have already shewn that it requires great patience and good ears to learn it at all, and that those who possess neither the one nor the other, will never be able to use it advantageously; but if the difficulties of any task were allowed as an argument against making attempts to overcome them, it may be asked, what would then become of all the sciences?

They also state, that it is indelicate to examine the chest of a female with this instrument under any circumstances; and that it frequently cannot be done, in consequence of the fatigue it occasions to the patient. With respect to the first, I have to observe, that it is an objection which I should only have expected from one individual in the British Empire, Sir Anthony Carlisle. I feel convinced that every pro-

fessional man of experience will join me in the following statement, that fewer objections are started by females possessing delicate and innocent feelings, to any kind of examination which their medical adviser may think it necessary to propose for their advantage, than by those who unfortunately are differently constituted. It is to be lamented that this objection is brought forward more in the spirit of special pleading, than with a view either to benefit science or good morals. It may be maintained, however, with truth, that the examination may be made in such a manner as not to occasion the slightest blush, as the patient need never be exposed, the different sounds of respiration being sufficiently heard for all useful purposes, through the texture of an ordinary night-gown. Instead of meeting with objections on the part of females, it has always occurred to me to observe not only a readiness, but an anxious desire, that the investigation of the nature and seat of any disease in the chest should be carried out to the most complete elucidation. Cases no doubt occur, in which it is inconvenient and painful to move the patient much; but these are comparatively rare, and must be so far disregarded when life is at stake.

I shall now turn to a more agreeable part of the subject, by shortly stating a few cases, shewing the advantage derived in actual practice from auscultation. A few years ago I was requested to see a patient who had been under the care of several medical men, and by way of giving me every necessary information, his friends put me in possession of all the recipes which had been recommended;—they would have filled a moderately-sized quarto volume. At one time, it was supposed that he had stomach complaint, and all known tonics were prescribed; at another, it was supposed to be scrofula, for which he took large quantities of the muriate of lime; at last, he was suspected to have diseased liver, and he got large quantities of mercury, and was several times completely salivated. Upon applying the stethoscope, I discovered a cavern in the superior lobe of the right lung, and was doubtful whether or not another did not exist in the left. Next day, I had the advantage of a consultation with my friend and colleague Dr Scott, whose superior knowledge of diseases of the chest

and stethoscopic tact, I am happy to have this public opportunity of acknowledging. He was merely asked to see a patient with me, without knowing the result of my previous examination, which he confirmed, with this addition, that he had also no doubt of the existence of a cavern in the left lung; and it was afterwards proved to be correct.—A remarkable case occurred to me some years ago, at a time when I was only beginning to make some progress in the use of the stethoscope. A man presented himself to me at my hospital, with all the ordinary symptoms of indigestion, and without a single sign indicative of any disease of the lungs. I examined him carefully with my ear, with a view of perfecting myself in the natural sounds elicited by respiration, and the tones of the voice, when, to my astonishment, I thought I discovered a small cavern in the superior lobe of one of the lungs. At that time, Dr Wavel, an excellent stethoscopist, was a pupil at my dispensary. He was requested to examine the man, without being made acquainted with my suspicions. Upon comparing notes, I found he was of the same opinion. It was subsequently discovered that the man coughed a little in the morning, but not so much as to attract his own attention; upon dissection, some months afterwards, our diagnosis was fully verified.

Dr Henry of Manchester, and others, will not forget the case I once had occasion to examine with him, in which we discovered empyema of the left side of the thorax, which had been treated for disease of the heart, because the pulsations were felt to the right of the sternum, instead of the left. By auscultation and percussion, we were enabled to state most confidently that there was extensive effusion, which pushed over the heart to the other side of the chest. The patient did not live above a fortnight afterwards, and the truth of our opinion was fully proved, by the existence of an immense effusion in the left side of the thorax, amounting, I believe, to twenty or twenty-six pounds of fluid, with large masses of lymph.

Liver complaints are too often confounded with disease of the lungs, in which it is of the greatest consequence to the patient, that the physician should be able to form a proper diagnosis, which he cannot do in many cases without the assist-

ance of auscultation and percussion. A case of this kind once fell under my notice. A physician treated a patient during some time for a pulmonic complaint, without knowing its exact nature or seat, which he could not fail to have discovered, had he been able to use the stethoscope. After a little time, the patient complained of uneasiness in the abdomen, and the liver was felt rather prominent on the right side, but pressure did not aggravate the symptoms. It then came out that the man had been in India for several years, and as that was the case, it was supposed he could not fail to have drank plenty of arrack, and therefore to have contracted an affection of the liver. He was accordingly salivated over and over again, but the enlargement continued to increase; and it may be briefly stated, that the man died. Upon dissection, his liver was found to be perfectly sound, and that the protrusion was occasioned by an effusion into the left side of the chest, which pressed down the diaphragm, and encroached upon the abdomen.

By auscultation and percussion, we shall always be able to discover the existence of large collections of fluid in the chest, which by ordinary symptoms cannot be determined. Dr George Gregory, a late writer on the Practice of Physic, in his article on hydro-thorax, or dropsy of the thoracic cavity, (627, ed. 1825,) states as follows: "The diagnostic symptoms of this form of dropsy are very fallacious. Sometimes we are confident of finding water in the thorax, when that cavity is perfectly free from disease. At other times, we observe the thorax full, when we had no suspicion of the complaint existing." I have no doubt, after writing this paragraph, the author applied himself most assiduously to the acquirement of stethoscopic knowledge, without which no man can treat diseases of the chest with any confidence.

It is well known, that there is a great resemblance between the ordinary symptoms of inflammation of the pleura, and a painful affection of the intercostal muscles, which is called pleurodynia; the resemblance is so great, that it is impossible to distinguish the one from the other without the use of the stethoscope. Not long ago, I had three such cases within a short space of time; one only proved to be pleurisy,

and that was the one in which I least expected to find it, from the slightness of the ordinary symptoms.

Within the last two years, I have seen three remarkable cases of chronic inflammation, and I believe extensive ulceration in the wind-pipe, which the ordinary symptoms announced to be the most hopeless cases of phthisis pulmonalis;—there was cough, expectoration tinged with blood, emaciation, debility, with bad feverish nights, attended by profuse perspiration. By the sound of the respiration, and the resonance of the voice, I was enabled to assure myself that the lungs were as yet sound, and they were all cured by means to be afterwards described in the proper place. Every year I see several cases of chronic bronchitis, which have been mistaken for phthisis, many of which were cured or relieved by the appropriate remedies, which must have terminated fatally if managed as cases of phthisis. In the treatment of inflammation of the substance of the lungs, it is of the utmost consequence to be able to tell whether the disease is extensive or not; whether it is in the first stage, that of active sanguineous engorgement; or in the second, that of solidification; whether the disease is advancing or declining, which can be done by no other means than auscultation.

It has already been attempted to be shewn, of how much advantage it is to sound the chest in cases of fever.

Much injury, it is to be apprehended, will result for some years to come, from individuals pretending to use this instrument, and pronouncing opinions as to the nature and seat of diseases, who are unacquainted even with the natural sounds of respiration, and who, as I have often seen, do not really know how to hold the stethoscope. Few individuals can acquire the power of using the instrument advantageously from books, without the personal assistance of some one already instructed; and I have known several gentlemen to give up the task as hopeless, because they could hear nothing at all, but who have resumed it, upon being properly assisted and instructed.

On the other hand, candour compels me to mention, that much mischief has been done by some good stethoscopists pretending to do too much; according to them, auscultation is

infallible; but that this is not to be expected from any human invention applied for the purpose of investigating or curing diseases, I need not waste time to prove. That it is *a great assistance, as an additional means of diagnosis* in diseases of the chest, no man possessed of the spirit of truth, who has fairly given it a trial, or who has followed the practice of those who can avail themselves of auscultation, will deny. I maintain, without the fear of contradiction, that perhaps one of the greatest advantages to be derived from auscultation, is that which enables us to obtain negative proof, in cases where we have failed in discovering positively the seat of the disease; for example, if a medical man is called to a case which has either been pronounced to be consumptive, or in which a doubtful opinion has been given, it is truly delightful to all parties, if he is able to give a positive assurance that the lungs are not affected, although he may not be able to tell exactly the seat of the disease.

Some medical men allege, that they can discover every condition of the lungs, quite well enough for all purposes, by the ordinary symptoms; therefore I shall now take a view of these symptoms, for the purpose of shewing the fallacy of this statement. The following symptoms are supposed to denote inflammation of the lungs, in the most satisfactory manner: Cough, dyspnœa, pain, quick and strong pulse, being softer, however, when the substance of the lungs is inflamed, than other parts. When these symptoms exist, they are supposed to be peculiar to inflammation of the lungs, that is to say, when they exist, inflammation is present; and when they do not exist, the disease is absent. Experience enables me to state, that not one of these symptoms, nor all taken together, positively indicate inflammation of the lungs in any of its textures, and that inflammation may exist without any of them being well marked; hence it is, that symptomatical physicians are so often astounded with the appearances on dissection, which they did not anticipate from the mildness of the symptoms; and hence it is, they too often decry the usefulness of morbid anatomy.

Cough is not peculiar to disease of the lungs, it may be produced in a violent degree by any kind of irritation about the larynx, epiglottis, and even the pharynx; mere excite-

ment of the circulation frequently produces cough, as well as diseases of the heart. I shall afterwards prove, that in some of the most hopeless cases of inflammation of the lungs, the patient *cannot* cough, in consequence of which the danger is greatly increased; therefore cough cannot be said to be peculiar to inflammation of the lungs.

Dyspnœa is as frequent a consequence of disease of the heart, as of the lungs; mere excitement in the circulation will produce both cough and dyspnœa. One of the most distressing cases of dyspnœa which I have ever had the misfortune to witness, dissection proved to depend on an enlargement of the gland, which fills up the angular space at the bifurcation of the bronchial tubes. From a mechanical cause, also, œdema of the inferior aperture of the glottis frequently produces a fatal dyspnœa. In many cases of extensive and severe inflammation of the bronchi, after free expectoration, the dyspnœa subsides so completely, that should a symptomatical physician happen to make his visit at that period, he will pronounce the patient to be convalescent, when perhaps within an hour or two he will be no more. Even in pneumonia, if the inflammation is confined to a small part of one lobe, which it frequently is, there is little dyspnœa, and the whole of one lung may be destroyed by chronic inflammation, without occasioning much difficulty of breathing, if the disease goes on very slowly.

With respect to pain, nothing is more deceptive, for there may be severe pain in the chest without inflammation, as has been already stated in the affection denominated pleurodynia. In bronchitis there is little or no pain; in pneumonia the pain is generally little marked; and, contrary to the statement made in all systematic works, respecting the severe pain in pleuritis, experience enables me to state, that it may go on most extensively, even to a fatal termination, without much complaint; hence we often see on dissection, most extensive adhesions of long standing, between the *pleura pulmonalis* and *costalis*, in individuals who had never been remembered to have experienced any very serious indisposition till their last illness.

It has already been shewn, that a hot skin is not an invariable phenomenon in inflammation, and the same remark may

now be made with respect to inflammation of the lungs; indeed, in bronchitis the heat of skin is frequently below par.

It has also been already shewn, that the pulse cannot be depended upon as a certain indication of inflammation; and in addition to the remarks already made in this work, I may now state, that hypertrophy of the left side of the heart frequently produces a strong bounding pulse, and also dyspnœa, when there is no inflammation going on in any organ of the body; and, on the other hand, dilatation of the left ventricle will produce a weak, soft pulse, at a time perhaps when every form of pneumonic inflammation is going on most rapidly.

All Cullen's definitions, in the sixth chapter, which treats of pneumonic inflammation, are therefore erroneous, as well as the following paragraph, (p. 335.) "Pneumonic inflammation, however various in its seat, seems to me to be *always* known and distinguished by the following symptoms:—pyrexia, difficult breathing, cough, and pain in some part of the thorax." It will be admitted that Cullen was at least as wise, talented, and observant as any of his symptomatical brethren of the present day; yet he confesses that he could not ascertain the seat of the disease by the ordinary symptoms, as will be seen upon perusing the 334th paragraph. "Under this title, I mean to comprehend the whole of the inflammations, affecting either the viscera of the thorax, or the membrane lining the interior surface of that cavity; for neither do our diagnostics serve to ascertain exactly the seat of the disease, nor does the difference in the seat of the disease exhibit any considerable variation in the state of the symptoms, nor lead to any difference in the method of cure." Proving by the latter part of the paragraph that he was a bad practitioner, as the inflammatory affections of the lungs require a different treatment in each stage: bronchitis demands a different plan from pleuritis, and pneumonia from either of the others. I venture therefore to predict, that in a few years, practitioners, even those who now ridicule auscultation, will be compelled, even in self-defence, to have recourse to this additional means of diagnosis, or they will lose their practice.

CHAP. II.

DISEASES AFFECTING THE MUCOUS MEMBRANE OF THE AIR-PASSAGES.

UNDER this title, I shall treat of Catarrh; Bronchitis; Inflammation of the Larynx; Croup; Hooping-Cough; together with some notice of the affection which is known by the term of Crowing Disease.

CATARRH.

When a patient is seized with slight chilliness, sneezing, very slight fever, impaired appetite, hoarseness, occasionally loss of voice, and cough, he is said to have catarrh, or a common cold. The bowels are generally out of order, and he has an exacerbation at night. The cough is sometimes slight, at others severe. A slight degree of wheezing is heard, and the disease has a salutary termination in a few days, by expectoration of mucus, which is discharged by occasional fits of coughing.

Sometimes the disease is confined to the mucous membrane of the nose and frontal sinuses, and is known by the vulgar denomination of "cold in the head."

When catarrh is very prevalent, attended by very considerable prostration, and constitutional symptoms which are otherwise slight, the disease has been denominated influenza.

But it must be confessed, that after a careful perusal of all the accounts which have been given of the various epidemics of the disease called influenza, I am unable to draw pathological conclusions as to the exact nature and seat of the affection. This part of the subject must therefore be considered undecided, till further observation by auscultation and percussion enables us to determine.

In considering the pathological difference between catarrh and bronchitis, it must be recollected, that in both the same membrane is affected, but in different parts; I imagine, that in the former, the diseased action is a very slight sub-acute inflammation, affecting the mucous membrane of the nose, frontal sinuses, the larynx, and trachea. Very slight cases of inflammation of the membrane lining the bronchial tubes, also frequently pass by the name of catarrh instead of bronchitis.

Causes.—Exposure to cold, particularly alternations from heat to cold, with insufficient clothing, is the chief cause of this complaint, as well as bronchitis. It would appear to be of no consequence how cold the air we breathe is, provided the surface of the body is properly protected; hence I believe, that bronchitic affections are, comparatively, of less frequent occurrence in very cold regions than in this variable climate.

Treatment.—We are seldom called upon to treat a simple catarrh, unless severe constitutional symptoms have been lighted up by some accidental cause, as constipation; a hard fit of drinking; or a load of indigestible food in the stomach; when an emetic, the antiphlogistic regimen, a proper course of laxatives, and confinement to the house, will generally be all the treatment found necessary. It may be mentioned, however, that the warm bath ought to be recommended when it can be conveniently obtained.

Sometimes we are consulted in consequence of the extension of the inflammation into the air-tubes, which has become aggravated by exposure in cold damp weather, when we shall frequently find that the disease has already made great progress. This is particularly the case with the children of the poor, who are badly fed and clothed, and for whom little can

be done under such circumstances, further than relieving distressing symptoms.

BRONCHITIS.

I shall treat of bronchitis in two forms, the acute and chronic.

Ancient physicians appear to have been unacquainted with the nature and seat of bronchitis, although many of them have recorded cases of the disease. Sydenham has described the affection, as it sometimes occurs, under the title *Peripneumonia Notha;* and it will be found, that most authors since his time have copied his description, still remaining ignorant of the nature of the affection. Hoffman's *Catarrhus Suffocativus;* Lieutaud's *Fausse Peripneumonie,* and *Catarrh Suffocante;* Sauvage's *Rheuma Catarrhal,* do not differ from Sydenham's *Peripneumonia Notha.* Morgagni, who may be justly regarded as the first, and one of the most successful cultivators of morbid anatomy, seems to have been so far aware of the nature of this disease in its chronic form, and he has given ample proof, in his second book, that he knew it had been confounded with phthisis.

Cullen has given a good description of the symptoms of the disease, under the term used by Sydenham, *Peripneumonia Notha,* but has not added any thing to our knowledge upon this subject; and moreover he entertained erroneous notions of the true nature and seat of the disease. The same remark may be made respecting the later work of Dr Mason Good.

The profession stands indebted to Dr Badham, now Professor of the Practice of Physic in the University of Glasgow, who published a little work on bronchial inflammation many years ago, in which the nature and seat of the disease is fully pointed out. From this excellent and early specimen of his talents, it is much to be regretted that his pen has not since shed a little more ink. Before the appearance of this work, the disease was very imperfectly understood even by the best physicians of the day; and even now, it is surprising that bronchial inflammations are so much neglected, particularly in fevers,

rheumatic, gouty and erysipelatous affections, as well as in the conrse of surgical practice.

Pure surgeons (by which I mean surgeons who pride themselves upon their powers of cutting and slashing, and boast of their ignorance of every thing medical,) should be told, that they frequently submit patients to capital operations, who are at the same time labouring under extensive inflammation of the mucous membrane of the lungs, perhaps in a sub-acute form, and which does not give rise to symptoms sufficiently violent to attract the attention of their surgical minds. They become worse from the progress of the disease, or in consequence, very probably, of the agony and fright experienced during the period of a painful and tedious operation. The pulse becomes weak; the skin cool; the face either very pale or somewhat livid; and the wound, of course, puts on an unhealthy appearance,—adhesion by the first intention does not take place, and at the first dressing, the lips of the wound are found gaping, discoloured, with a foul discharge. In such cases, patients are too generally crammed with wine, bark, and stimulating food, under the idea of preventing debility and putridity. Notwithstanding these remedies, the strength fails, and gin and brandy are in vain had recourse to; the destruction of the parts in the neighbourhood of the wound takes place, and the patient dies, it is supposed, from gangrene, which is too frequently attributed to the bad air of the hospital. I do not mean to assert, that all cases which go wrong after surgical operations, are owing to bronchitic inflammation; but I maintain that many are, and particularly the cases in which erysipelas follows. But I shall say more on this subject when treating of erysipelas in the 2d volume of this work.

Symptoms of Acute Bronchitis, with the Stethoscopic signs.—The symptoms excited by inflammation of the mucous membrane lining the bronchial tubes, vary very much, as might be expected, according to the severity and extent of the inflammation. The tubes of one lobe may be affected, when the symptoms will be slight; the inflammation may be still more

extensive, affecting perhaps both lungs, and the symptoms will also be slight if the diseased action is very sub-acute.

The acute form of the disease, which I am now to describe, commences with some degree of chilliness, succeeded by pyrexia, hoarseness, dyspnœa, and a dry cough; tightness, or sense of stricture in the chest, and oppression at the præcordia; prostration of strength; loaded tongue; costive bowels. Almost always an exacerbation is observed at night. In a day or two, expectoration takes place, which relieves the patient very much for the time; the respiration, however, becomes more difficult, but the cough bears no proportion to the dyspnœa; the tightness about the chest is increased, along with a sense of suffocation, when the pulse becomes very rapid. The deadly paleness or lividness of the lips and cheeks becomes more apparent; the countenance more and more anxious; and the patient frequently requests to be raised, and to have more air. A loud wheezing may now be heard, even at a distance from the bedside. The voluntary muscles of respiration are brought into play. The patient becomes insensible; rattling is heard in the throat; the extremities and face become quite cold, covered with cold perspiration, and are frequently of a leaden colour.

Sometimes head symptoms take place, and head-ache is much complained of, which may be attributed to impeded circulation in the head. The wheezing is produced by the air passing through the diseased secretion in the air-passages, and may be heard by placing the ear to the chest, long before it becomes so severe as to be distinguished by any other means.

The cases of acute bronchitis most to be dreaded, are those in which, the oppression in the chest being more or less considerable, there is neither heat of skin, pain, nor much febrile movement in the pulse. In fact, these three symptoms may be said to be below par; no alarm is taken till some organic lesion has been produced, and when at length the signal of distress is displayed, it will be found too late to save the patient.

This disease is very fatal in infancy and childhood; and I shall now mention its course and progress at that period of life. It commences in the same manner as in adults,

like a common cold. The breathing becomes oppressed; all the voluntary muscles connected with respiration are called into play; the shoulders are in constant motion as well as the nostrils, and the abdomen becomes more prominent, by the increased action of the diaphragm during inspiration. Sore throat frequently accompanies the disease, and the child suffers so much increase of pain during the act of coughing, that it tries to suppress it; wheezing soon takes place, which is more decided than dyspnœa; expectoration is generally followed by mitigation of suffering, which continues for a longer or a shorter period, till more phlegm is formed. The mucus secreted in the air-passages, is also frequently discharged by spontaneous vomiting, exactly as occurs in hooping-cough. Children under four or five years of age, can rarely be made to spit up the phlegm, unless assisted by the act of vomiting; but they swallow it after it has been discharged from the air-passages. Children refuse food, but drink greedily until the disease is far advanced, when they cannot take a long draught from want of breath. An infant at the breast sucks pretty well during the first stage of this affection; but subsequently, although it seizes the nipple with avidity, it cannot suck for any length of time together, perhaps not for more than ten or fifteen seconds, when it will be observed to bite the nipple very forcibly, and discontinue sucking, it will cry, and be observed to throw its head back quickly, and will continue in this position for some time, even after the cough has produced the expulsion of the mucus *. If the disease remain unsubdued, the dyspnœa increases; the face shews the usual marks of impeded circulation; the surface becomes cold; the extremities sometimes swell, and the child dies from suffocation. Very often, the sound of the voice and the cough are as shrill as in the croup, and the one disease is very frequently mistaken for the other. Dr Hastings, in his very excellent work on the lungs, has given a concise account of a variety of acute bronchial inflammation, to which young children are peculiarly subject, which I have often had occasion to see. Although more dangerous, the symptoms are not of corresponding severity; in truth, it

* This position seems to facilitate the passage of air into the lungs.

is a sub-acute inflammation of the bronchial membrane throughout the whole extent of both lungs. No severe symptoms are excited as long as expectoration continues free, and is discharged with ease; but should the mucus by any accident increase, the cough at the same time ceasing, speedy death from suffocation inevitably follows, unless vomiting is excited, which seems to have the effect of emptying the air-passages of the secretion. Other cases take an unfavourable turn, by the inflammation becoming more active, from some accidental circumstance, such perhaps as exposure to cold. Cases of this sort are most common in the spring of the year. In the acute bronchial affections of children, there are often considerable variations in the state of the breathing and the pulse,—the latter depending in a great degree on the former. The breathing for several hours continues free and easy; afterwards it gradually becomes worse; and at last great difficulty takes place suddenly, even to threaten immediate suffocation. These exacerbations appear to be owing to three circumstances; 1*st*, Collection of mucus in the bronchi; 2*dly*, Increased circulation through the lungs; and *lastly*, Venous congestion. Children so affected, soon fall into a comatose state; the face which, for some days perhaps, had been quite pallid, now becomes livid, or a dark circle shews itself round the mouth, and the child sinks in the manner already described. In some urgent cases, the child is destroyed in sixty or seventy hours from the time alarm is taken; however, the majority of cases are not so rapid, the course of the disease being from five to fifteen days; but when it continues long, other structures generally become involved, the inflammation spreading by contiguity; and the same thing happens in adults.

In all affections of the lungs, particularly in the acute, the bowels suffer very speedily, are constipated, and the evacuations fetid.

The expectoration in Bronchitis is at first scanty and viscid, particularly so in the most acute cases; by degrees it becomes more copious and less viscid, and therefore more easily expectorated, till at last it is discharged in considerable quantity, having the appearance of starch mixed with small bubbles of air, and occasionally streaked with a little blood. If the

case goes on well, it gradually diminishes, and becomes a little yellow in colour; at last the patient is only troubled with the cough and expectoration in the morning; at length they cease entirely. Sometimes, however, the acute disease runs into the chronic form, which is now to be described.

CHRONIC BRONCHITIS.

Like other chronic inflammations, this sometimes succeeds to an acute attack, as already described; sometimes, however, it takes place as a slow and insidious inflammation of the bronchial membrane. This form of the disease may affect individuals of all ages; but is most frequently met with in old people, and those who, by occupation, are exposed to the inhalation of dust. It also sometimes succeeds to the eruptive fevers; and sometimes it co-exists with diseases of the heart.

It is frequently mistaken for phthisis pulmonalis; and is one of the morbid conditions of the organs within the chest, which gives rise to the symptoms denominated asthma; it is also a frequent cause of dropsical affections.

When the disease succeeds to acute bronchitis, the fever declines, but the pulse for some time continues frequent; the cough and difficulty of breathing continue, but are always relieved for a considerable time, after free expectoration. The patient has still night exacerbations and disturbed sleep, which, however, gradually decline with the disease. The expectoration still copious, becomes opaque, yellow, sometimes like pus, and occasionally has a greenish hue; at last it diminishes in quantity. The appetite returns; and although weakened by copious perspiration through the night, and upon making the least exertion, the patient is sensible of gaining some strength. Gradually all these symptoms cease, and some individuals appear to undergo a perfect cure; but in general they are not so fortunate, for during the subsequent part of their lives, an easterly wind, or a humid atmosphere, occasions a renewed attack; and with many, the same effect is produced by eating indigestible food, or by neglecting the state of the bowels. Now and then, therefore, such people become indisposed;

the voice becomes hoarse; the cough short and croupy, with more or less oppression in breathing, attended or not by febrile symptoms. In the chronic form of the disease, the expectoration takes place in a much shorter time from the commencement of the indisposition than in the acute disease; sometimes in a few hours: it is viscid at first, but soon becomes copious, and the patient is relieved by the discharge. One attack leads to another, till at last the individual is always affected with dyspnœa,—is constantly coughing and spitting,—is unable to lie in the horizontal posture,—feels great difficulty in mounting a stair,—and is said, in short, to have an habitual asthma.

Morgagni, and the other old writers, seem to have been well acquainted with the phenomena of chronic bronchitis. We are told, for instance, by Morgagni, that Valsalva examined the body of the Bishop of Imola, who was supposed to have died of phthisis, having had considerable expectoration before his death; but he did not find tubercles, or any other disease, in the structure of the lungs.

In the acute and chronic forms of bronchitis, cases now and then present themselves, in which the expectoration is very small in quantity, so as sometimes scarcely to be perceived, all the other symptoms being the same; under which circumstances, the disease has been denominated "Dry Catarrh," and "Dry Asthma."

Stethoscopic Signs.—Percussion affords little information in any of the forms of bronchitis; but auscultation enables us to determine the stage and extent of the disease, even before the symptoms are completely formed. In the first stage of inflammation of the mucous membrane of the bronchi, it certainly becomes somewhat swollen, probably from the increased quantity of blood in its vessels, and its surface is dry; upon applying the ear to the chest, either with or without the cylinder, instead of hearing the natural soft murmur of respiration, a louder sound strikes the ear; sometimes like a snore, at other times sibilous, or resembling what may be called a somewhat harsh, brazen sound. It is more sono-

rous, and flatter, according to Laennec, in proportion as the mucous membrane is swollen, and its surface dry; and he states,—"When so strong as to resemble the prolonged scrape of the bow on a large violoncello string, or the note of the wood-pigeon, there are usually redness and swelling at the bifurcation of some of the principal bronchia *."

As the disease advances, it has been stated that wheezing takes place, which is produced by the passage of air through the diseased secretion in the bronchial tubes; this is called "the mucous râle or rattle," which in many cases is so loud, as not only to be heard on entering the room, but to be felt by placing the hand upon the chest, which experiences a vibration during each inspiration and expiration. In some cases, we may find the respiration suspended in a portion of the lung for an hour or two, which becomes restored after a severe fit of coughing. In this case, percussion may be of some assistance to us. These occasional interruptions to respiration, are owing to a plug of tenacious mucus or lymph closing up the entrance of the tube; or it may be completely filled with viscid matter.

In chronic bronchitis, attended with expectoration, we have the same mucous rattle, in some cases over the whole thorax, remarkable instances of which have occurred in my dispensary practice; but if without expectoration, then we hear pretty loud snoring, which is denominated the "dry sonorous rattle;" occasionally it resembles the cooing of a wood-pigeon; and sometimes at the very top of the inspiration, a sound is heard like the chirping of a bird.

Occasionally a prolonged hissing sound is perceived, flat or sharp, of greater or less intensity, which is called the "dry sibilous rattle," which has also a resemblance, sometimes to the chirping of birds; and sometimes a sound is heard, which Laennec has aptly compared to that which is "emitted by suddenly separating two portions of smoothed oil stone, or by the action of a small valve." In truth, it is what may be denominated a clicking sound. Laennec states, that these sibi-

* Forbes's Translation, p. 67.

lous sounds are probably owing to minute portions of very viscid mucus, obstructing more or less completely the small bronchial ramifications, or to a local contraction of the smaller tubes, from thickening of their inner membrane.

Appearances on Dissection, and Pathological Remarks.—On opening the thorax, we generally find that the lungs do not collapse, if the individual have died from suffocation in consequence of the engorgement of the bronchi with matter. In some cases, in which the cough has been severe, the surface of the lungs looks white, as if coated with a layer of coagulable lymph; but on examining more closely, it is found to depend on an effusion of air beneath the pleura, forming that peculiar condition termed emphysema. On opening the trachea, it will sometimes be found filled with matter; but in general, it is only coated over with thick, viscid mucus, which, when wiped off, shews some degree of redness, increasing towards the bifurcation. The bronchial tubes are found more or less filled with matter, which is sometimes like mucus or pus; occasionally it has a mixed appearance, which is appropriately denominated muco-purulent, its colour varying accordingly; sometimes it is tinged with blood, and looks reddish. This secretion is found occasionally even in the air cells, distending them, giving a uniform granular appearance to the whole of the part affected; and there can be no doubt, that this is one way in which tubercular formations take place in the lungs. Upon washing away this matter, the mucous membrane itself will be found sometimes intensely red; at others, of a dark red, like lees of wine; generally, however, the dark red colour will be found to increase in the course of the ramifications. The texture of the membrane itself is observed to be thickened, more especially in chronic inflammation. Ulcerations are frequently seen at the great bifurcation, rarely lower down. The pulmonary substance will be found more or less congested, and sometimes œdematous. These are the ordinary appearances observed in bronchitis, the following are to be regarded as accidental. False membrane is sometimes found in the trachea, the same as in croup; the lungs are seen in different states of inflam-

mation, from active sanguineous engorgement, to complete disorganization; pleuritic effusions are also sometimes found, and enlargement of the bronchial glands. In the brain we frequently see marks of impeded circulation, sometimes inflammation. In the abdomen, the liver is sometimes found gorged or altered in structure, and the mucous membrane of the stomach and bowels shews various degrees of vascularity; sometimes ulcerations are observed. These appearances in the liver and bowels, are in all probability owing to long continued impeded circulation through the lungs, and the diseased condition of the blood.

In chronic bronchitis, we sometimes find considerable dilatation of the larger tubes, which perhaps is chiefly brought about by long continued distension,—a remarkable case of which once occurred to me. In this instance, I declared that there was a cavern in the superior lobe of the right lung, which upon dissection turned out not to be the case, but there was immense dilatation of the bronchial tube; thus mistaking bronchophony for pectoriloquy.

In making *post mortem* examinations, with a view of discovering the nature and seat of bronchitis, these accidental morbid alterations of structure should be kept in mind, along with the symptoms and progress of the case; because although they may form the most prominent appearances on dissection, and are no doubt in many instances the cause of death, yet they are only to be regarded as the effects of the original disease. Nay, sometimes an individual labouring under acute or chronic bronchitis, may have expectorated freely, immediately before death, either during the act of coughing or vomiting, when we shall find little or no effusion in the bronchial tubes; and sometimes very little redness. It is proper also to state, that notwithstanding the attention which has been paid of late years to the pathology of the lungs, there is still a great deal of ambiguity connected with this subject, arising out of the knowledge of the fact, that dividing the pneumo-gastric nerves in animals produces dyspnœa, change of voice, and effusion into the air-passages.

Of all the symptoms, wheezing is the one which may be said to be peculiar to bronchitis; cough and dyspnœa, it has

already been shewn, are common to all diseased conditions of the lungs, and not only of the lungs, but of other organs. Some assert that it is owing to spasms, but this is not the case, for we find that it is greatest before expectoration takes place, the patient afterwards being pretty free from it till a fresh secretion collects in the air-passages. The dyspnœa has also by some been attributed to spasm. Reisseissen thinks he has ascertained the existence of circular fibres in the ramifications of the bronchii, commencing at the point where the cartilaginous circles terminate. Laennec supposes that he has himself also proved the existence of these fibres upon branches of the bronchi, of less than a line in diameter; and therefore concludes, that spasmodic contraction of these fibres occasionally produces dyspnœa. I am far from admitting this structure in the present state of our knowledge, but even if it were so, it is of little consequence, when there is an increased quantity of mucus in the tubes themselves, offering a sufficient mechanical cause for the phenomenon itself, and for the exacerbations and remissions, which are so frequently observed in all the forms of bronchitis. Whatever consequence may be attributed to such a structure, in accounting for the symptoms in some cases of asthma, it is of little practical importance in acute or chronic bronchial inflammation.

It has been already shewn, how the brain becomes affected during the course of bronchitis, when severe pain in the forehead is often remarked. Some suppose this is owing to inflammation of the membrane lining the frontal sinuses; but this is not the case, for if it were, this symptom would be most severe when patients are affected with what is called "a cold in the head:" besides which, it is a different kind of pain. That which proceeds from the state of the membrane in the frontal sinuses is pungent, producing a flow of tears, exactly as when we smell volatile salts. The lividity of the face and lips, and mucous membrane of the mouth, is owing to the want of the usual changes which take place on the blood in the lungs.

Treatment of Acute Bronchitis.—This depends exactly upon the period of the disease, the extent of the morbid action, the

state of the cough, and the expectoration. Bleeding is certainly not necessary in every case of bronchitis which comes before us, particularly if slight, and confined to a small part of the lung; but if the whole lung is affected, and more especially when both are implicated, bleeding is to be had recourse to early and decidedly, or not at all. It is a very doubtful remedy when the second stage is far advanced, and highly injurious in the last. I know no disease more under management by any remedy, than bronchitis is by bleeding, if performed properly in the first stage, or during the first part of the second; and there is no case in which the stethoscope is more useful, for without it, this disease will advance through the first stage before detected by the ordinary means of investigation. Many assert, that bronchial inflammation will run through a certain course, in spite of every remedy; and so it will, if the inflammatory stage is nearly over before detected, or if bleeding be not used in a decided manner. Although late bleedings are to be condemned in this disease above all others, yet cases do occur, where the lungs become suddenly congested with blood, in which a well-timed venæsection is of signal service.

Even in the first stage of double bronchitis, one bleeding will in general suffice, and we need not be afraid to carry it to syncope, as long as the air-passages are free from mucus; but after it has collected in considerable quantity, and I speak more particularly with respect to double bronchitis, sudden death may be the consequence, by robbing the patient of that strength which is required in coughing to produce expulsion. In bronchitis, we can scarcely ever determine the necessity or the propriety of bleeding by the ordinary signs, because in some cases the disease may be very extensive, without violent symptoms; in others, it may be very slight, and the symptoms very severe, owing, perhaps, to a disordered state of the stomach and bowels, or to some other, perhaps slight, cause; and it is of great consequence to know when to desist from further depletion.

Cullen, in the 381st paragraph, states, that "in case the fever, catarrhal, and pneumonic symptoms, are immediately considerable, a blood-letting will certainly be proper and ne-

cessary; but where these symptoms are moderate, a blood-letting will hardly be requisite; and, when an effusion is to be feared, the repetition of blood-letting may prove extremely hurtful." Which statement sufficiently proves that he must have practised with great uncertainty. We are to decline bleeding, not because we are afraid of producing effusion, but when we know that it already exists in considerable quantity in both lungs.

Leeching or cupping are very seldom serviceable in the far advanced stages of this disease; but in children who are too young to be bled at the arm, leeches are to be applied; and we have sometimes great difficulty in determining the number, —suffice it to say that it is better to apply few when in doubt upon the subject, and to repeat the operation in a short time. If consulted early, we can make a near approach to the effects produced by general bleeding, by applying a considerable number of leeches at one time, and stopping the discharge soon, so as not to allow the body to be slowly drained of blood; but even in children, it is far better to draw blood from a vein, when it is practicable. I speak from the result of considerable experience.

Next in point of importance to blood-letting, in pulmonary inflammation, stands antimony, as a counter-stimulant; this was well known, and constantly acted upon by Cullen, Fordyce, and others, many years ago, and it surprises me very much to hear this practice attributed to Italian and French physicians. Digitalis is of little use, unless given in considerably larger doses than are generally recommended; but it is a dangerous remedy when the air-passages are much loaded. Emetics are very serviceable in the first stage, and are absolutely necessary in the last, in order to clear the air-passages when the cough fails to do so; and are more particularly serviceable in childhood and infancy.

Purgatives were at one time thought highly injurious in all inflammatory affections of the lungs, but upon erroneous pathological views.

With respect to expectorants and diaphoretics, my belief is, that they are more injurious than beneficial, except in chronic affections; and I have often had to regret the loss of much valuable time by trusting to them.

Opiates are more frequently injudiciously administered in inflammatory affections of the lungs, than in any other class of diseases. They are exceedingly serviceable in some cases, but these are indeed very few in number; in the great proportion of cases they are injurious, and in some, may be the cause of death. These observations more particularly apply to the disease under consideration. Nothing will be found more detrimental than opiates, in the last part of the second, and during the whole of the third stage, when the patient's life depends upon the cough and the expectoration; and many an individual has perished under such circumstances, in consequence of a three hour's sleep. But they are sometimes useful, in the first stage, after the disease has been got under by the lancet, when they subdue irritation, the continuance of which would perhaps lead to a relapse; also in the last stage, when there is little or no secretion in the air-passages towards the close of the affection, and when there is sometimes considerable irritation and a violent cough, which, if not subdued, keeps the patient from sleep, and wears him out.

Counter-irritation is another powerful remedy in pulmonary inflammations; but all authors agree in condemning the too early application of blisters, which, in truth, ought oftener to be employed as a measure of safety, rather than of necessity. In acute cases, we cannot wait for the counter-irritation produced by antimony ointment, therefore a blister is to be applied.

Attention, during the whole period of the disease, should be paid to the temperature of the extremities; and a warm bath has sometimes excellent effects in removing irritation, and promoting the comfort of the patient.

The regimen should be strictly antiphlogistic; but stimulants are occasionally very serviceable in the last stage. The patient is sometimes so weak and languid, that he cannot make any voluntary efforts to cough, upon which, perhaps, his life depends. In such a case, a stimulant, frequently repeated, occasionally snatches an individual from the grave. It is difficult, however, to account for the stimulating treatment practised by Laennec, who, in recommending the use of the spirituous preparations, such as warm wine, burnt brandy, and punch, says—"This plan is unquestionably eminently successful in a vast number of cases. By it we frequently ob-

serve a cold which seemed to threaten great severity, cured all at once in the course of a single night," (page 70.) But he observes in the subsequent page, that this plan is most successful in the very onset of catarrh; and that it is much less so after the supervention of the loose expectoration. Whether it is owing to the difference of climate and constitution, it is difficult to determine; but that the disease of which I have been treating, demands very different means on this side of the Channel, I need not waste time to prove.

In the treatment of all acute and sub-acute pulmonary inflammations, it is necessary to keep the patient quiet in bed, —every exertion is to be avoided; the exercise of the voice is also injurious; and during recovery, it is essential to attend to the diet and clothing; the bowels are still to be regulated; bitters are also sometimes serviceable. In all severe cases, I hold it to be of advantage to persevere, for several weeks, in keeping up an eruption on the surface of the chest, by the application of the tartrate of antimony ointment, or the frequent application of mustard plasters, or stimulating embrocations. Change of air, however serviceable it may be in some chronic cases, is often very detrimental in those now under consideration; unless it be from the smoky air of London to the country, and even then it is always doubtful, whether the patient is to be benefited or injured by the change. But I shall say more upon this subject when treating of hooping-cough.

Treatment of Chronic Bronchitis.—In the treatment of this form of the disease, we must ever keep in view, that patients are in danger of sudden attacks of acute inflammation, which, under such circumstances, are frequently fatal; or the substance of the lungs may become affected, from the diseased action spreading by contiguity; or, lastly, from œdema of the lungs, which is a common consequence of this affection.

General bleeding is very rarely necessary, except under the following circumstances, viz. the occurrence of acute inflammation, and sudden congestion of the lungs; also in cases of dropsy depending on bronchitis. Counter-stimulants are almost as rarely necessary as general bleeding. The frequent

exhibition of emetics cannot be too highly extolled; they appear to be most serviceable at night, immediately before the usual hour of rest, and in the morning, particularly after a tolerably long sleep: their *modus operandi* has been already explained. Constant attention to the bowels is of the greatest utility; and the occasional use of the warm bath is serviceable when the skin is dry and harsh. Expectorants appear to be sometimes serviceable, and the best is squills; but I have not much faith in their action. Most benefit in that way seems to be derived from a blister, or using the inhaler; that is to say, I have seen expectorants used for a considerable time without any benefit, but after the application of a blister, or the use of the inhaler, the discharge has become free and easy. Of all the remedies hitherto recommended for the cure of chronic bronchitis, the best is long continued counter-irritation by a succession of blisters, or the application of antimony ointment, and particularly the latter; the effects of which I shall dwell more upon when treating of hooping-cough.

The balsams have been strongly recommended, as being of peculiar efficacy in inflammation of the mucous membranes, more especially that of the lungs. Dr Armstrong has spoken very favourably of them in his work on Scarlatina, &c.; but I have no doubt, subsequent experience has modified his opinions upon this subject. I have tried the copaiva in many cases in my own practice, without being able to discover its efficacy. Tar vapour has been recommended as a sovereign remedy in phthisis, and there can be no doubt it has been very beneficial; but the cases in which service is to be expected, are those of uncomplicated chronic bronchitis. I think good effects have frequently been produced in my practice from the *tinctura lyttæ*, but exhibited in doses two or three times greater than those commonly used.

If change of air is to be had recourse to, a warm situation should be chosen in a dry sandy soil; patients should avoid exposing themselves in cold damp weather, particularly in this country, when the wind blows from the east. Warm clothing is highly necessary; but it is important that medical men should prevent the patient from being too much loaded; and the best way to prevent this is, by recommending a

leathern jacket and drawers, and to forbid a great coat, particularly if he is allowed to take walking exercise. I must refer the reader to Dr Forbes's translation of Laennec's work, for much valuable information on the subject of bronchial disease, and also to the notes of the accomplished and experienced translator, who has conferred a boon upon British practitioners which can never be forgotten.

INFLAMMATION OF THE LARYNX.

This disease has a very close analogy to croup; which indeed seldom exists, without extending to the membrane lining the larynx; but as the inflammation is sometimes entirely confined to the latter organ, it is necessary to give a separate description of each disease.

Inflammation of the larynx is a common cause of death in small-pox and scarlatina, and sometimes also follows measles. When this disease occurs in the acute form, it is known by a painful sense of constriction in the throat, which is increased by pressing the larynx; speaking aggravates the pain, as does swallowing; the voice is hoarse; the breathing soon becomes laborious and shrill during the act of inspiration; there is considerable heat of skin, thirst, rapid pulse, great anxiety marked in the countenance. On looking into the throat, the fauces frequently look swollen and turgid, and of a dark red colour, or coated with lymph; but this affection of the throat is not peculiar to this complaint, as the inflammation may be entirely confined to the larynx. In some cases, the epiglottis is also involved, and renders the motion of the tongue, in the act of thrusting it out of the mouth, painful. The patient is constantly hawking, in order to clear the air-passages, and spits up a small quantity of thick tenacious mucus. As the disease goes on to a fatal termination, the face becomes swollen and turgid, and has frequently a livid appearance, and it quickly destroys life by suffocation. Convulsions occasionally precede death. This disease sometimes runs its course in from thirty-six to forty-eight hours.

A chronic form of inflammation of the larynx, although described by some as being of more frequent occurrence than the acute, is, I apprehend, less frequently met with; the mis-

take having arisen from being confounded with the disease described by Bayle, under the name of *œdema glottidis*. That chronic inflammation, however, does take place, we have very good proof, from the ulcerations which are sometimes found in the larynx, and also round the glottis, which even destroy portions of the cartilages. In the chronic disease, particularly when attended with ulceration, there is pain ascribed to the part affected, great difficulty in swallowing, which aggravates the pain, hoarse voice, dyspnœa; the patient passes distressing feverish nights, and expectorates a scanty sanious-looking matter, which has occasionally a bad odour. This form of the disease sometimes accompanies phthisis pulmonalis; whether it does so or not, the patient becomes emaciated, and dies with every symptom of hectic fever.

On dissection, in the acute disease, the mucous membrane is found vascular, thickened, and rough from minute ulcerations, or covered over with a thick exudation of lymph, or a matter like pus is observed.

With respect to the treatment, as it is the same with that recommended in croup, I shall consider them together, after describing the latter disease.

CROUP.

This disease is of frequent occurrence among children residing in certain situations; it consists of an inflammation of the lining membrane of the trachea, and is often connected with bronchitis and laryngitis, the one running into the other, so much so, that they are often confounded. It is not yet a hundred years since this disease was first recognized, but the first good description was given by the late Dr Home. It is rather curious that croup is a disease almost peculiar to infancy and childhood, while inflammation of the larynx and bronchial tubes occurs at all ages. Although there are some instances of croup affecting adults *, yet it is rare to see it after twelve years

* It would appear that General Washington, the liberator of America, and Joséphine Bonaparte, both died of this affection. This last fact is stated by Bretonneau, (at page 65.) on the authority of Béclard, who discovered the disease when employed in embalming the body.

of age. One attack predisposes to another; but as age advances, this susceptibility goes off. It is more frequently met with on the sea-coast than in inland districts, and in the neighbourhood of wet marshy lands than in dry situations; thus it appears to be more frequent in Leith than in Edinburgh, notwithstanding the high and exposed situation of the latter.

Dr James Hamilton jun. has stated, that croup is a common disease in certain parts of Edinburgh; but I am enabled to contradict this statement, as my dispensary practice lies in these very districts; whereas bronchitis is very frequent, and I feel persuaded that he has often mistaken bronchitis for croup. Above three thousand people have been attended annually by my pupils for several years past, and out of more than twelve thousand patients we have not had above twelve cases of croup; but I have frequently been asked to attend dissections of children, who were supposed to have died of croup, which proved upon examination to be bronchitis.

This disease has been divided into three species, viz. the acute, chronic, and spasmodic. Under the last head, I shall take an opportunity of noticing the affection already mentioned, as first described by Bayle in the year 1819.

Phenomena.—It usually commences like a catarrh, the symptoms being more or less severe, with some degree of fever, preceded by chilliness; the voice soon becomes hoarse; febrile symptoms increase; and in a day or two, the breathing becomes more and more impeded, particularly during the act of inspiration; at last the respiration becomes stridulous, and the voice shrill; a harsh, dry cough exists from the beginning, and when there is any expectoration, it has more or less of a muco-purulent appearance, sometimes small masses of colourable lymph are spit up, which occasionally resemble portions of false membrane. As the disease advances, the expression of countenance becomes more anxious; the lips and cheeks have a swollen, livid appearance, alternating perhaps with a deadly pallidity. The pulse is frequent and small, and occasionally intermits. There is prostration of strength, and restlessness; although the surface of the body, generally

speaking, is hot, the extremities are frequently cold; at last, the body is covered with a cold, clammy sweat, and the child dies of suffocation. On looking into the throat, the fauces are sometimes found inflamed and swollen; but it is not a necessary part of the disease, it merely shews that the inflammation is extensive. Many cases of croup, however, which I have seen, appear to have been produced by the extension of the inflammation from the throat into the air-passages. This was the case in the disease described by M. Bretonneau, and to which he gave the name of Diphthérite *. The course of the disease is very various; sometimes children are cut off early from asphyxia, but in general it lasts from two to four days. In chronic affections of the trachea, the symptoms are less violent and urgent, but having, upon the whole, pretty much the same character, viz. dyspnœa, shrill voice, and stridulous breathing. This is also the affection which I conceive Dr Warren has called "bronchial polypus," and which he has described in the 1st volume of the Transactions of the College of Physicians.

Causes.—There can be no doubt that cold and moisture produce the disease, and that sometimes, from peculiar circumstances, a great many cases have occurred in the same district. The most remarkable epidemic appears to be that which took place at Tours some years ago, and which is described by M. Bretonneau, during which one hundred and fifty individuals died. It affected adults as well as children, and was particularly severe in a French legion quartered in the district. This author also supposes it to be contagious, which, from the facts he has detailed, is very probable, although there are a great many difficulties yet to be solved before we can altogether admit this point. It sometimes succeeds to bronchitis, and also to severe inflammation of the fauces, as has been already stated.

Appearances on Dissection.—On opening the trachea, false membrane is found lining the organ in various states; sometimes it is soft and diffluent; sometimes partial; at others ex-

* Traité de la Diphthérite, par P. Bretonneau, 1826.

tending throughout the whole canal, even beyond the bifurcation. Sometimes it is found of very considerable thickness and firmness, of a tubular form, corresponding exactly with the canal which it covers, and extending an inch or two into the bronchi; on some occasions, the first divisions of the tubes are as completely lined as the trachea. Frequently the larynx is also affected, but I have never seen the complete tube in this situation. On some occasions, bronchitis coexists in one lung, or in both, which must always be kept in view, when considering the probability of affording relief by the operation of bronchotomy. I have also seen the lungs inflamed in various degrees, and almost always considerable portions are in a state of engorgement, owing to the mechanical impediment to respiration.

In M. Bretonneau's numerous dissections, false membrane was found extending from the tonsils down the air-passages, and sometimes even into the œsophagus.

Pathological Remarks.—Since the publication of Dr Cheyne's beautiful illustrations of croup, no doubt has existed that the false membrane is the product of severe inflammatory action of the mucous surface.

A great deal too much has been attributed to spasm in this disease. Cullen, for instance, assigns more danger to spasmodic action, than to the exudation of lymph. In the 327th paragraph, he says, " The peculiar and troublesome circumstance of the disease, seems to consist in a spasm of the muscles of the glottis, which, by inducing a suffocation, prevents the common consequences of inflammation :" and again, in the 329th, " When the disease ends fatally, it is by a suffocation, seemingly, as we have said, depending upon a spasm affecting the glottis; but sometimes, probably, depending upon a quantity of matter filling the bronchiæ." At the same time, he attributed the febrile symptoms to a corresponding spasm on the surface; in fact, he was fond of riding his spasmodic hobby, and so unacquainted with pathological investigations, that his great mind was always turned out of the proper path of investigation.

Spasm may certainly exist in this disease; but there is

sufficient to account for the symptoms without having recourse to this unsatisfactory doctrine. We have at first slight difficulty of breathing, from the increased vascularity and distention of the vessels of the mucous membrane producing swelling, and consequently some diminution in the calibre of the air-tube; subsequently, from a greater or less degree of congestion of the lungs; and lastly, from the exudation. Sometimes death is produced by asphyxia early in the disease, from congestion of the lungs, and from the inflammation being peculiarly severe at the rima of the glottis, occasioning such a degree of swelling as to prevent inspiration, and children often die during the act of crowing.

Treatment *.—This is a disease of all others which requires promptness of decision, and activity in practice; for if the false membrane is allowed to form, not above one case in the hundred will be saved. The worst cases we can be called upon to treat, are those in which a sore throat has been neglected, and the inflammation has spread into the wind-pipe; or those in which a child has laboured under bronchitic symptoms for a week, or perhaps more, before the disease has affected the trachea and larynx, under which circumstances, a recovery is rather to be considered as an escape, than as an event to be expected. Very opposite opinions exist respecting the treatment; some trust, perhaps too much, to bleeding and blistering, to the neglect of other means; and there are others who assert that bleeding is injurious. I shall first state the practice which I have found to be successful, and afterwards that which has been recommended by others.

If consulted early, there can be no doubt of the propriety, nay, the necessity of drawing blood; if by opening a vein, so much the better, because we can thereby make an instantaneous impression upon the disease, and upon the system, by diminishing the quantity of blood, altering the determination, and unloading the lungs. However young the child, if

* The same observations are equally applicable to inflammation of the larynx.

above eighteen months or two years old, I would recommend this practice from experience; but only when the child has been previously healthy, and we are satisfied that there is no considerable effusion into the ramifications of the bronchi, and that the false membrane is not already formed in the trachea; otherwise, death will frequently be the consequence. This happened in the case related in the 18th observation of Bretonneau's work; the patient was bled on the sixth day of a severe disease, and died the same night. Among other appearances found in the dissection of this case, the following are described at page 160.—"The false membrane lined the larynx, the trachea, and extended deep into the air-passages even to the fourth subdivision of the bronchi of the right side, and the last ramifications on the left."

Leeches are to be applied in numbers corresponding to the age, strength of constitution of the patient, and period of the disease; and should be placed along the course of the windpipe, or top of the sternum; they should be repeated according to circumstances; but it can be of no use to draw blood even in this manner, if a sufficient number of leeches are not used and re-applied at sufficiently short intervals, or if not employed till the false membrane is already formed. In the case which forms Bretonneau's 17th observation, detailed at page 155. it will be found that a child of twenty-seven months old, was seized on the 4th December with a slight cold, and altered tone of voice. During the 5th and 6th, it became worse, and on the 7th, we are told that *three leeches* were applied to the neck, and a little ipecacuan was prescribed, which was continued on the 8th and 9th without the leeches; the child died on the 12th. It is no wonder, then, that this author should condemn depletion, this being the way in which it was employed.

If general blood-letting is used, one operation ought to be sufficient, and we must subsequently trust to the application of leeches.

Emetics are to be administered, more especially at the beginning of the disease, and when it is complicated with bronchitic effusion. In the commencement, the best emetics

are the antimonial, prepared by dissolving two grains of the tartrate of antimony in two ounces of water, a tea-spoonful of which is to be given every five or ten minutes, till the full effect is produced. In many cases it is difficult to produce vomiting, but by giving the antimony, we ensure its counter-stimulant effects, whether vomiting be produced or not. Brisk purgatives are also necessary, until the bowels are freely opened. During the whole course of the disease, the warm bath used occasionally through the day, will be found serviceable. The effect of blisters is often very decisive, after bleeding and leeching have diminished the violence of the disease in the first stage; but it is needless to torture children after the false membrane is formed. Children can rarely be made to inhale hot vapour; if they can, it will be found very serviceable.

We are informed by Dr Mason Good, that two physicians of St Petersburgh, Drs Harden and Miller, had ventured upon cold effusion *after every other remedy had failed*, and the practice was attended with success; but no one who understands the pathology of this disease, and has seen the appearances on dissection, will believe that the false membrane could be removed by such means.

I have a very high opinion of the action of calomel in this disease, if employed early, and not trusted to entirely, to the neglect of general and local bleeding; the more rapidly the system is affected the better; and it should be given in doses of two, three, and four grains, so that from two to three scruples are taken during the first twenty-four hours. If the calomel produce hypercatharsis, it is to be discontinued, and mercurial ointment is to be rubbed in on various parts of the body. The mercurial treatment should not, however, be too long persisted in; if it is to have any effect, it should be seen within the first thirty or thirty-six hours. It is impossible to say in what manner the calomel acts. Mason Good says, "it not only acts by exciting a salutary revulsion or counter-action, but *breaks down the thicker parts of the blood, from which the membranous secretion is principally furnished!*" page 427. Dr James Hamilton jun. was once a mercurial champion of the highest order; he used calomel in very large quantities; but he has

now changed his tune, and considers it in the light of a poison, in almost every other case but syphilis. Is there another individual in the British empire, who having cured forty-six out of fifty cases of such a dreadful disease as croup, by means of the action of calomel, which Dr Hamilton alleges he has done *, would not feel justified in recommending others to follow the same treatment? But this useful remedy has since been cast in the back-ground by his attempting to prove, "that the action of mercury tends, by exciting inflammation and effusion, to produce thickening of various membranes, particularly of the pleura †."

Bronchotomy has been frequently recommended, and occasionally successfully practised, in croup. There are cases in which it ought to be performed, because there is a probable chance of success; and there are others in which such a step will only tend to bring surgery into disgrace. If the disease is confined to the larynx and upper part of the trachea, we ought not to hesitate if suffocation is threatened; but if the membrane extends into the bronchial tubes, it will be improper; if the case is complicated, with extensive bronchitic inflammation and effusion into both lungs, it will also be improper. It appears to me that bronchotomy should be had recourse to only under the three following circumstances:—In inflammation of the larynx, threatening suffocation;—when foreign bodies have accidentally found their way into the larynx;—and in the peculiar affection of the epiglottis, larynx, and rima glottidis, which was first minutely described by Bayle.

When performing this operation in a case of croup, it should be always kept in view, that if the disease is far advanced, the false membrane has a tubular form; in fact, it has taken the shape of the canal, from the surface of which it is very easily separated; so that when the incision is made through the cartilages, the membrane may collapse from the

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* "On the Use and Abuse of Mercury," &c. page 206.

† Idem, page 219.

pressure of the atmosphere, and produce instant death. Before quitting this subject, I may mention that Bretonneau, in the epidemic which he described, trusted at last entirely to the action of mercury, and the local application to the inflamed tonsils, of pure muriatic acid; and he assures us that the practice was attended with great success. With regard to calomel, he says, (at page 94.) that its good effects were perceived in a few hours after the administration of the first doses. But after a careful perusal of the work, and the result of the practice, I see no reason to alter the opinions already expressed.

Chronic inflammation of the trachea requires the frequent application of leeches, with blisters alternately; inhaling hot water vapour, as well as breathing the vapour of tar, together with an occasional emetic; the steady use of laxatives; warm clothing, and farinaceous diet.

The disease which is described by Bayle, and to which I have several times alluded, is an œdematous affection of the larynx, glottis, and epiglottis. I conceive, however, that this pathology is too confined, and that it is often owing to the swelling produced in the first stage of acute inflammation of the mucous membrane, when it is swollen and dry; and also to chronic inflammation, which is not attended with œdema. It is also sometimes produced by sudden congestion of the vessels of the mucous membrane, which had previously been in a state of irritation, as I shall attempt to shew, when treating of the pathology of hooping-cough.

It appears to me, that this is the disease which sometimes goes by the name of "Spasmodic Croup." The same pathology also serves to account for the phenomena of the affection, which is commonly known by the appellation of "crowing disease."

It is also probable, that this is the true pathology of the disease described long ago by Miller, and afterwards noticed by Parr and others, under the denomination of "spasmodic asthma of children."

It is supposed that croup is a disease consisting of a combination of inflammation and spasm; but, that spasmodic croup consists entirely of spasm. Occasionally, children die of it

after giving a single crow, and I had once an opportunity of seeing a man of 40 years of age die in a few hours from the first attack. Upon minute inquiry, it will be found, however, that individuals cut off in this sudden manner, have for some days or weeks laboured under what is called a common cold.

I am inclined to believe, that this disease may also be produced by cerebral irritation, causing some morbid action in the nerves which supply the muscles of the throat, and which, by producing a convulsive spasm, occasions the contraction of the larynx, so as to bring about the phenomena which I have now to describe.

Symptoms.—Children are generally seized in the evening, or during the night, with a sense of coldness over the whole surface, laborious breathing; during inspiration, a long shrill sound is produced, alternating with coughing, and occasionally weeping, when the voice is observed to be hoarse and croaking. There is a sense of constriction in the throat, expression of great anxiety in the countenance, with lividity of the cheeks and lips.

These phenomena are produced by the application of cold, and even by cold feet; they frequently occur during dentition. The bowels are almost always found to be in a neglected state. It is rarely fatal.

On dissection, the lungs will be found in general loaded with dark-coloured blood, so much so, as to have lost a great deal of their natural colour and buoyancy; at one time, I was disposed to regard this condition of the lungs as the disease, till a fatal case occurred, at the dissection of which I had the able assistance of my colleague, Mr Syme, who displayed the state of the mucous membrane of the larynx in the most satisfactory manner, and who first drew my attention to the memoir written by Bayle. The following is the history of the case.

Edward Currie, at 40, a labourer.—Up to the period of the great fires in Edinburgh, which took place in November 1824, he had always been a healthy, stout man. During his attendance in working the engines, and in carrying water, he was exposed to cold and wet, and was subsequently affected with

what he called a severe cold and sore throat, attended by occasional head-aches; but having a large family, and being of industrious habits, he continued to work at his daily labour. On the 2d of January following, he became worse, and was unable to go out, but sat at the fire-side almost the whole of the day, complaining of chilliness, sore throat, and tightness about his chest. After passing a bad night, he sent to my dispensary for assistance on Monday. At 5 o'clock in the evening, he had severe rigors with difficulty of breathing, and at ½ past 6, was visited by one of my pupils, Mr Marshall, whose name is associated with many other interesting cases, and from whom I received the following report;—"On seeing him, I believed he had caught a cold; he complained of sore throat, and evinced some uneasiness in swallowing, but there was no appearance of inflammation of the fauces, nor pain on pressing the wind-pipe. The rigors were still severe, the pulse strong, beating about 70 in the minute, and there was a sense of constriction in the chest. He was bled to the amount of 18 oz. during which the rigors ceased, but afterwards returned."

Mr Marshall thought his patient was in no danger, and that the symptoms would soon give way to the remedies he had prescribed; but in about an hour after he took his leave, the dyspnœa became much worse, attended with severe rigors. Mr Davidson, a respectable surgeon in the neighbourhood, was immediately sent for, who found the man in such a dangerous state, that he wished me to be present before any step was taken; but soon the symptoms became so much more urgent, that he could no longer wait, and he opened a vein in the arm; the blood was flowing on my arrival. About 18 oz. were abstracted with very little or no relief: although a large orifice was made, the blood did not flow in a stream, and it was very dark-coloured and thick. It coagulated very imperfectly, yielded no serum, and had every appearance of what is commonly called "dissolved putrid blood." The state of the respiration sometimes resembled that which is heard in croup, after the formation of the false membrane; at others, that of hooping-cough, during the paroxysm; indeed, the similarity was so great, that I heard a number of women discussing the

point. It was ascertained that he experienced the greatest difficulty in breathing during the act of *inspiration*, when he made the shrill crowing noise. There was cough. He spoke distinctly after the bleeding, which he could not do before, but it was in a low voice, and seemed to cost him a considerable effort; he said, "I feel rather better." His face was pale and anxious, and I was told that it had been so for several hours, pulse rapid and feeble. Upon being subsequently asked if he had any pain, and where it was situated, he replied by placing his hand upon the thorax, and nodding. During the momentary absence of Mr Davidson and myself in an adjoining apartment, the patient felt a desire to make water, and actually got out of bed unassisted, and lifted the chamber-pot. Upon our return, he was cautioned to lie down, and on no account to make such an exertion again; but he persisted, declaring he felt somewhat better, and in a moment afterwards he was dead.

The body was opened 36 hours after death. The following were the appearances observed. Right lung attached throughout its whole extent, by old adhesions to the pleura costalis, left lung free. The lungs and trachea were then carefully dissected out, including the root of the tongue, and minutely examined. The lungs themselves were of a very dark colour, heavy, and congested everywhere with dark-coloured blood; and although there was no hepatization, yet two thirds of these organs, when separated into small pieces, sank in water, a little below the surface; this was proved not to depend on alteration of structure, for by washing they were restored to their natural colour and buoyancy. The mucous membrane every where in the larynx, trachea, and bronchial tubes, was of a dark red colour, and coated with reddish mucus; but the bronchial tubes were not gorged with it, as seen in the lungs of those who die of bronchitis; the larynx was found so much ossified, that after slitting it open, it could not be separated to any extent; the mucous membrane at this part was found so much swollen, as to leave the smallest possible passage for the transmission of air at the superior, but particularly the inferior aperture; the epiglottis was also much swollen, erect and stiff, and of a red colour.

Treatment.—This affection in children so frequently terminates after copious perspiration, that it has led nurses to put them as soon as possible into a hot bath, which is in general so efficacious, that it is the first thing which ought to be done. An emetic ought also to be given, and if these means fail, a vein should be opened, and a moderate quantity of blood abstracted, or leeches applied about the larynx. This is the case of all others for bronchotomy, and I confess, that it is probable the life of Currie might have been saved, if the operation had been had recourse to. M. Thuilier has recommended compression from time to time of the œdematous epiglottis, which in truth will not be easily effected; and if it could, little service would follow, as it is the condition of the membrane at the rima of the glottis, which occasions the danger. Bayle himself proposed the introduction of a sound into the trachea, failing which, bronchotomy. Lisfranc suggested that incisions should be made into the œdematous parts, to facilitate the discharge.

HOOPING-COUGH.

This disease is also known by the appellations, chin-cough, kink-cough, &c. and it is probable that it is not a disease of such recent origin as has hitherto been imagined. Gardien very sensibly states, that if it has not been described in France until the year 1414, it is because it has always been confounded with other species of coughs. Indeed, some pretend that it was known to Hippocrates, while others assert that it was imported in more recent times from the East. It is not of much consequence how this matter really stands, because the most perfect knowledge as to its true origin, would not enable us to treat the disease more successfully. It is a disease of childhood, although I have seen many instances after adult age. Heberden says that he has seen it in a woman of threescore and ten, and in a man of eighty years of age. It may be said only to occur once in a lifetime, but several cases have fallen under my notice of secondary attacks. Dr Rosenstein states, in his work on the diseases of children, &c. that in Sweden, in the course of sixteen years from 1749, forty-three thousand

three hundred and ninety-three children died of the hooping-cough, which gives an average of 2712 per annum; but in the year 1755, five thousand eight hundred and thirty-two children died of this distemper. In general, however, when it raged less, from seventeen hundred to two thousand are annually lost by it in that kingdom. According to Dr Watt, the deaths from hooping-cough in Glasgow, have been pretty nearly $5\frac{1}{2}$ per cent. of the whole deaths in that city: the greater number in any one year took place in 1809, when they amounted to $11\frac{1}{4}$ per cent.; and he concludes, that next to the small-pox formerly, and measles now, chin-cough is the most fatal disease to which children are liable. He gives a table, which appears to prove, that in young children there is more danger than in those further advanced in life; which does not accord with my experience *.

Phenomena.—In the first stage of hooping-cough, the disease is almost always confounded with a common slight catarrh: the duration of this stage varies very much; in general, however, it extends from ten to twenty days. There is a dry cough, occasional sense of constriction in the chest, and a feeling of weight in the head. The eyes are sometimes a little swollen and red, with frequent sneezing, and involuntary tears: in many cases, there is little or no fever except during the night: the bowels are generally out of order. We sometimes suspect the disease to be hooping-cough, because it is epidemic at the time, or in consequence of the convulsive appearance of the paroxysms of coughing; but we are frequently mistaken. At last, however, the cough assumes a peculiar character; when this takes place, the disease is said to be in the second stage. It is characterized by an inspiration which is long and sonorous, producing a peculiar shrill noise, which is termed, in common language, the hoop or kink, to which succeeds an ex-

* It affords me great pleasure to refer the reader to Dr Watt's work on Hooping-cough, as the best which has ever been published; and also to that of the late Dr Marcus of Bamberg, who died the day after he sent his preface to the press.

piration, which is broken by frequent fits of coughing. No one who has ever seen the disease, when fully formed, can ever mistake it. When the cough commences, in slight cases, the features become a little swollen, the face red, the eyes suffused with tears; the cough hoarse, and is interrupted frequently by the long inspiration; the paroxysm ceasing with an expectoration more or less copious, frequently assisted by the act of vomiting, which also discharges the contents of the stomach. As soon as this is accomplished, children are able to return to their usual amusements, and appear to suffer little or nothing, until towards the period of the next paroxysm. The appetite in general, in such cases, continues good. The expectoration is at first slight, scanty, and viscid; but if the disease goes on in a favourable manner, the discharge becomes more copious, and less tenacious. Young children scarcely ever spit out the expectoration, unless during the act of vomiting; at other times, it is swallowed as soon as discharged from the air-passages.

The patient is, in general, warned of the approach of the paroxysm, by a greater or less degree of chilliness on the surface, and a tickling in the throat, immediately succeeded by a sense of tightness both in the larynx and chest, and a dread of suffocation, which induces him to fly to his nurse, if he can, or to lay hold of any thing within reach, for support during the fit. Others seem to derive relief from lying all-fours on the ground, and when the discharge has taken place, they are instantly able to jump up and run about.

In more severe cases, the sense of suffocation is dreadful; the respiration is much more impeded; the cough more intense and protracted; the features more swollen, and of a livid colour; the eyes seem ready to start out of their sockets; the eye-lids are much swollen, and the cheeks perhaps bathed in tears; till at last expectoration takes place, when the children pant for breath, and are unable to return to their play for a considerable time. The skin is above the natural temperature, particularly at night; complaint is made of head-ache; the appetite is bad, and the bowels are much disordered.

The straining which takes place during the paroxysm is sometimes so severe, as to produce the involuntary discharge

of feces and urine. It is no uncommon thing for a small blood-vessel to give way in the conjunctiva, producing ecchymosis; hæmoptysis itself occasionally takes place, but this is rare in comparison to epistaxis, which is very frequent, and, when it takes place in plethoric children, is considered a very fortunate occurrence.

In the worst forms of the disease, fever is constantly present, and the breathing is always more or less impeded, which shews that some mischief is going on internally. Fits of temporary asphyxia are frequent, which are very often mistaken for convulsions, and from which children are sometimes instantly cut off. It must be remarked, however, that children have been known to die suddenly during a paroxysm, asphyxiated, whose cases were previously slight, and not attended with fever. In some instances, however, convulsions take place.

Causes.—Hooping-cough is rarely sporadic; it prevails as an epidemic. Some assert that it is unquestionably contagious, while others allege that it is not so. Some suppose that it is a disease produced by a miasm of a specific nature, and peculiar quality.

Appearances on Dissection.—My extensive dispensary practice has afforded me between forty and fifty opportunities of examining the bodies of those who died of this disease*. In one severe epidemic, we had upwards of two hundred cases, out of which there were thirty-two deaths. The appearances found on dissection were very uniform, according to the period of the disease at which death took place. I have seen two dissections of children who died, during the paroxysm, asphyxiated, and in these the lungs were found to be gorged with blood; the whole lung, when put into water, shewing far less

* It may be mentioned as a remarkable fact, shewing the improved state of society, and the advantages of education, in removing prejudices and destroying superstition, that in Edinburgh it is rare to be refused an opportunity of examining a body after death, if sufficient attention has been paid by a medical man during the course of the illness,—except by the low Irish population, who seem to become more solicitous about their dead after they leave their own country.

buoyancy than natural, and large portions, when cut off, were found to sink to the bottom of the vessel. But it was proved that this increase of gravity was not owing to alteration in the texture of the organ, which resumed the natural colour, appearance, and buoyancy, when deprived of the blood by washing. The right side of the heart, and the large vessels near it, were distended with dark blood. The mucous membrane of the air-passages every where presented a dark red appearance, seemingly thickened, the tubes containing more or less mucus; in these cases, it was tinged with blood. The brain was not examined.

In ordinary cases, when death takes place during the second, third, or fourth week, the following is a sketch of the appearances. In the head, marks of vascularity and of venous turgescence, and sometimes also effusion of serum between the membranes, and in the ventricles; but these were far from being invariable appearances. In some few cases, there was great vascularity, and some effusion at the base of the brain, more particularly at the origin of the nerves, but not to greater extent than has been frequently remarked in bronchitis, and other diseases in which there was no tendency to spasmodic cough, or to spasm of any kind. In one case, which was accompanied by most violent and intractable convulsions, in which I remarked considerable rigidity of the superior extremities, and pointed it out to others, before the child died, the substance of the brain had a rosy tint; on making sections, large drops of blood quickly exuded from numerous points on the cut surfaces, larger than I had ever seen them before. On exposing the lateral ventricles, the left *corpus striatum* and *thalamus* were observed to be enlarged, particularly the former; so much so, that in measuring the depth of the brain on each side, it was discovered to be nearly half an inch deeper on the diseased side than the other; when cut into, it was found to be rather harder than the corresponding parts on the opposite side. The child had previously enjoyed a good state of health, and even after death did not appear much emaciated.

In the thorax I have never failed to see disease. On some rare occasions, the lungs were somewhat collapsed; but in

general they not only filled their respective cavities after the sternum was raised, but seemed to expand a little more. In a few instances, the pleura costalis was covered with a very unctuous secretion. Once or twice the lungs adhered to the walls of the chest, by an intermediate deposition of soft coagulable lymph. The anterior surface of the lungs, in almost all cases, presented spots of a whitish appearance, as if coated over with coagulable lymph; but this was found, upon closer examination, to depend on emphysema, air being effused beneath the pleura, from the rupture or enlargement of the air-cells; considerable portions were observed gorged with blood. Sometimes the substance of the lungs were in a state of œdema; and occasionally portions were observed inflamed.

In individuals who have not been cut off till the eighth or tenth week, tubercles in various states will be observed; sometimes vesicular, at others crude, large and solitary, at others softened, partly discharged by expectoration; and on one or two occasions, I have seen one lung completely infiltrated with a soft caseous matter. The bronchial glands are also found enlarged, if the patient does not die before the third or fourth week.

The mucous membrane throughout the air-passages, has always displayed more or less vascularity, increasing towards the ramifications, and the tubes are found completely filled with matter, which has more or less resemblance to pus. In the trachea and larynx, this secretion is also observed, but I have never seen them filled with it, like the bronchial tubes. Sometimes flakes of coagulable lymph are to be observed, and also ulcerations about the glottis, in the larynx and trachea, but more particularly at the great bifurcation.

In the abdomen, sometimes every structure appears to be in a healthy state; at others, the liver is found to be gorged with blood, sometimes whiter, at others redder than natural. The mucous membrane of the stomach and bowels, has shewn various red patches, and I have also seen ulcerations in the colon, and enlargement of the mesenteric glands.

Mr Alcock, a scientific general practitioner in London, in one of the numbers of the Medical Intelligencer, states, that he "has repeatedly ascertained by dissections of patients who have died of hooping-cough, that the larynx invariably exhi-

bited signs of inflammation, often to so great an extent, as by its swelling to close mechanically the glottis; often the exudation of coagulable lymph near the larynx, the mucous membrane of the trachea and bronchiæ much increased in vascularity, and the cavities of the latter filled with fluid, more or less mixed with air, the fluid varying from that of thin mucus to perfectly formed pus." This extract was presented to me by a friend, one day after my lecture upon this subject, but I have never been able to procure the number of the periodical, which contains the whole of the paper. I have thought it right, however, to give the extract, and to express the high respect I entertain for Mr Alcock, from the accounts which have reached me at different times, of his zeal and indefatigable exertions for the improvement of pathology.

The above appearances which I have described, will be found to correspond with the dissections recorded in Dr Watt's Treatise.

Pathology.—Until lately, the most uncertain opinions prevailed respecting the nature and seat of this disease. Some supposed it to be a nervous affection, and of a true spasmodic character. Chambon and others, assert that it is a true catarrh of the stomach. Some represent it to be a pure inflammation of the mucous membrane of the larynx, trachea, and bronchial tubes, to their termination in the air-cells. While there are others, like Gardien, who think that the disease is partly situated in the lungs themselves, but that the essence of it consists of a spasmodic affection of the glottis and diaphragm. In consulting the works of Willis, published in the year 1670, it will be seen that nothing was then known of the nature and seat of hooping-cough, and from the general want of success in treating it, this branch of practice fell into the hands of old women and quacks. According to the Brunonians, it is a disease of true debility. Some, indeed, conjoin it with typhus; while others allege, that it depends on inflammatory action in the brain. Rosenstein places the seat of hooping-cough in the nerves of the chest, and Hufeland agrees with him in that opinion. Autenreith declares, he found the pneumo-gastric nerves inflamed. Breschet seems to support this opinion, but

although it may have occurred on some occasions, it is denied by other authorities. Guersent has stated, that he opened a number of bodies with a view to determine the fact, but that he had not discovered it. No pathological information can be derived from Cullen's work, or from Dr Thomson's recent edition of it, respecting this, or any other disease; but according to his absurd nosological arrangement, it is evident he thought it to be of a nervous and spasmodic nature, having placed it among the Neuroses. Dr Gregory, it would appear, gave up the investigation of the nature and seat of the disease, for he used to make the following statement in his lectures :—" I do not attempt the proximate cause, though I may mention I have no faith in the theory that was advanced some years ago, that the disease depended on the stomach; it is more probable that it is seated in the lungs." Yet he considered it to be of a spasmodic nature.

The oldest opinion which can be quoted, approaching to the true pathology of this interesting disease, is that which was advanced by the celebrated French writer Astruc, who states, (at page 142. of his Treatise on all the Diseases of Children,) that " this disease principally consists in inflammation of the superior part of the larynx and pharynx, and more particularly of the latter, which is sometimes ulcerated with the constriction of the glottis, as dissection proves."

It appears to me, that investigators have bewildered themselves in endeavouring to discover the first link in the chain of diseased action, and also by the character of the cough, with regard to which, it should be recollected, that a very slight degree of irritation in the larynx, and even about the glottis, will produce most violent convulsive fits of coughing. Dr Watt says, that the cough is exactly what may be produced by any very violent irritation applied to the same parts, " of which, (says he,) I had a very striking proof some time ago. Two children had differed about their play; the one who supposed himself ill used, to be revenged on the other, took a handful of saw-dust, and endeavoured to thrust it into his mouth. He succeeded in his attempt. The other crying and struggling for relief, allowed a quantity of dust to be drawn into the wind-pipe. This gave great uneasiness, and after a

short time excited violent convulsive fits of coughing, which exactly resembled those of the chin-cough. Even the hoop was very distinctly formed. At first he spat up nothing, afterwards thick mucus; at last the irritating cause being removed by the expectoration, the other symptoms disappeared. This was a very striking example of chin-cough being brought on artificially." I have sometimes seen the same effects in both old and young, from articles of food, and particularly small portions of sweet-meats, going the wrong way, as it is termed, *i. e.* dropping into the larynx, or adhering somewhere about the margins of the glottis or epiglottis. I was once present at the dissection of a shoemaker, who died from extensive inflammation of the throat and wind-pipe, and who had during the whole of his illness, of four days standing, violent convulsive fits of coughing, with a complete hoop. On examining the throat and air-passages, extensive inflammation was discovered, a small piece of a hog's bristle was found sticking in the margin of the glottis.

My own opinions of the nature and seat of the hooping-cough are as follows.—That there is something peculiar in the disease, no one can deny, since almost no individual escapes contracting it once in his life-time. I have also no doubt that the nervous system is involved in the affection,—very seriously involved; but in the present state of our ignorance of the structure and functions of that system, the doctrine of spasm must be very cautiously received into the medical evidence of the case, more particularly as all the phenomena can be explained most satisfactorily without its aid. The essence of the disease consists in irritation and inflammation of the mucous membranes of the body, but more particularly of the air-passages. This is proved by the pectoral or catarrhal symptoms, which are to be observed from the very first onset of the disease; by the increased secretion; and by the result of dissections which have been already noticed. Some say it cannot be inflammation, because there is no febrile movement in the pulse in slight cases, and no increased heat of surface; but it has been already shewn to be a fatal error in medicine, to suppose that inflammation may not exist without fever. In the majority of cases of hooping-cough, the inflammation, al-

though always extensive, is only *slightly sub-acute*, and there is consequently no heat of skin,—no increased velocity of the pulse,—no thirst; but when the inflammation runs a little higher, then we generally have these constitutional symptoms. It will be observed on perusing the description given by every author of this disease, that it begins with the common symptoms of catarrh, and from which it cannot, during the first stage, be distinguished by any criterion.

The disease, when formed, comes on in paroxysms. I shall not stop to enquire whether these paroxysms are occasioned by a peculiar affection of the nervous system or not, for the reasons above mentioned. The paroxysm commences with a sense of coldness on the surface, marking an irregular determination of blood, which takes place towards the lungs, for reasons which perhaps never will be satisfactorily explained. These organs become gorged with blood, and the air is consequently prevented from obtaining a free passage through the ramifications of the bronchi and air cells; some degree of dyspnœa is produced, with tightness in the chest, and a sense of suffocation. All the powers of the constitution are brought into play to remove this congestion, which has also affected, in a peculiar manner, the whole of the mucous membrane,—violent coughing is excited,—all the voluntary muscles are called into excessive action, and a universal muscular commotion is produced, which tends to force the blood on in its circulation,—a copious secretion takes place from the mucous membrane, probably throughout the whole extent of the air-passages; and the fit ceases when the mucus is discharged, which is sometimes assisted in its expulsion by the act of vomiting. Towards the close of the paroxysm, a determination of blood takes place to the skin, frequently producing copious perspiration, which is probably assisted, if not entirely produced, by the violent muscular commotion in which the body is thrown. This is also perhaps another way by which the congestion of the lungs is removed.

It is generally believed that the hoop, at all events, is produced by spasm. It is not my business to attempt to disprove that, which has never been established otherwise than by mere assertion; but I have already shewn that the hoop has been

produced by extraneous bodies, which have found their way into the larynx, or have been only lodged about the glottis. It has been also shewn, that in pure inflammation of the mucous membrane of the larynx, before and after the effusion of coagulable lymph, the same sound has been heard; and also by the diminution of the calibre of the larynx at the *rima glottidis*, by mere swelling of the mucous membrane, as well as by effusion, forming the disease which Bayle has described under the name of *œdema glottidis*. In all these cases, there is the long sonorous or shrill inspiration. Cullen says, (in the 1404th paragraph,) that "the peculiar sound is produced by air rushing through the glottis with increased velocity." It is admitted that this is occasioned by the diminution of the canal through which the air has to pass, and the only question to decide is the cause of this diminution. Cullen and others assert that it is owing to the spasmodic contraction of the muscles of the throat, which are connected with the larynx; while with others I maintain, that it is generally owing to the other causes:—the fact is capable of explanation in both ways; but it influences the treatment, as I shall hereafter shew. In hooping-cough, we have decided evidence of congestion and inflammation of the air-passages from the facts already stated; the larynx, and parts in the neighbourhood, principally suffer, and at the commencement of the paroxysm, when the lungs are congested, the mucous membrane, I apprehend, becomes more swollen, and the space at the rima of the glottis is diminished, so as to be almost closed. It is the difficulty which the air experiences in traversing this part, which produces the phenomenon of the hoop, and increases the tendency to asphyxia and convulsions. The distension of the vessels is relieved in the manner already hinted at, viz. by increased secretion and determination of blood to the surface.

Sometimes the lungs are not properly relieved from the state of congestion which I have described, which, if life is not immediately destroyed, terminates in inflammation of the substance of the lungs, or the formation of tubercles.

As has been already shewn, the brain is frequently affected, not in all probability from any primary diseased action in that organ, which some have supposed, but from the obstructed

circulation in the lungs, and the over-loaded state of the right side of the heart, preventing the free return of blood from the head; besides which, the brain, as well as every other part of the body, must occasionally suffer from what may be termed the chemical condition of the blood itself, owing to the want of those natural changes which take place in the lungs, which are prevented partly by the congested state of these organs,—partly from the want of a sufficient supply of air during each paroxysm,—and also by the diseased condition of the mucous membrane itself.

Treatment.—Dr Ferrier, in his Medical Histories and Reflections, (vol. iii. p. 215.) says, that "hooping-cough has been too much trusted to the management of nurses, and has been empirically treated, even by those physicians who have applied themselves to the particular consideration of the complaint." Dr Gregory, in his lectures upon this subject, with that frankness and candour which marked his career, used to make the following statement:—"I think it proper for me to warn you, in the first place, that we have no cure for it." Cullen divided this disease into two stages: the first continues perhaps for three weeks; during this period, he imagines the contagion to be present, and operating on the animal frame. The second stage embraces the whole remainder of the disease, should it last for twelve months. Dr Mason Good says, that he believes the hypothesis to be correct; "throughout the first stage, (says he,) our attention should be directed to whatever will moderate the influence of the contagious stimulus, retard the return of the convulsive paroxysms, and mitigate their violence."

"Bleeding, (says Mason Good,) in severe cases, will be found necessary for this purpose; but it should be avoided, except in severe cases, as spasmodic affections are often rather increased than diminished by the use of the lancet; and it will in general be found better to employ blisters as a substitute." This paragraph contains almost the best proof I could bring forward, that bleeding, even in the present enlightened age, is generally recommended and practised upon unsound principles. If bleeding be necessary at all, it is for the pre-

vention or cure of inflammatory, and not spasmodic action; but it is only in *severe cases*, according to Mason Good, that bleeding is to be used, "*as spasmodic affections are often rather increased than diminished by the use of the lancet.*" Now, it appears to me, that if the lancet tends to increase a slight spasmodic complaint, it will surely aggravate a severe one in a still greater degree.

Bleeding is not necessary in a great majority of cases, nay, it might prove injurious in some, by interfering with the efforts of the constitution; but when the patient has fever, difficulty of breathing between the paroxysms, a near approach to asphyxia or convulsions during the paroxysm, or if he complains always of a sense of stricture in his chest, or severe headache, I would recommend blood-letting, by opening a vein, if the patient be robust, and above two years of age; and I have frequently seen the best effects from opening the jugular on such occasions. It is impossible to say what quantity should be taken; it ought to be sufficient, however, to make an impression upon the disease, and upon the system. I once saw a boy six years old, labouring under hooping-cough, who was in great danger, from the congested state of his lungs and brain. I requested the gentleman who was in immediate attendance, to open a vein, and to allow the blood to flow till relief was obtained. At my next visit, I found that 15 ounces had been abstracted. He bore the bleeding well, and his condition was very much improved. Next day, however, violent enteritic symptoms took place, which were not subdued till after the application, in all, of twenty leeches. This boy made a remarkably rapid recovery.—It must not be understood that I would recommend the same quantity of blood to be taken from every child of that age: the case is mentioned to shew the quantity that may be abstracted without producing any bad consequences, and to shew its power in controlling the disease.

We must depend upon leeches in young children; as well as in older patients, in advanced stages of the disease. The number of leeches must be regulated according to the circumstances noticed when treating of bronchitis.

It should be mentioned, that hooping-cough is a disease in

which auscultation is to prove a most valuable means, enabling us to determine whether inflammatory action is going on in the lungs,—whether it is general or partial,—and whether the bronchial tubes are loaded with matter; if they are, we should be deterred from bleeding, for reasons so much insisted on when treating of bronchitis.

After I was convinced of the morbid state of the larynx and *rima glottidis*, producing the hoop or kink, as it is sometimes termed, it naturally occurred to me that leeches, applied in the close neighbourhood of the part affected, would be attended with the best effects in cases where the paroxysms were severe, threatening asphyxia. The theory may be wrong, but I can speak confidently of the success of the practice. I had an opportunity of trying it in twelve cases, in three of which the hoop never returned, although the children were previously threatened with asphyxia; all the others were relieved in the most striking manner; and had it been necessary, from the re-occurrence of urgent symptoms, to apply them again, or had a greater number been put on at first, I feel persuaded the hoop would have been destroyed in the whole. I shall never forget the relief of this symptom, which occurred in the case of a lady, the most severe and interesting I ever had under my care. Five children in one family were under my care, with hooping-cough; two of them had considerable dyspnœa between the paroxysms, with a tendency to asphyxia during each attack, and were exceedingly ill; blood was taken from the jugulars with extraordinary relief; a third had leeches frequently applied, from the urgency of the symptoms. These three recovered speedily. The other two had the disease so favourably at first, that they did not require any treatment, except keeping the bowels open, and an occasional emetic, yet they were the most troublesome cases out of the five, and were double the length of time indisposed.

A solution of the tartrate of antimony will be found useful, if the diseased action in the lungs shew any tendency to increase. Emetics have been much over-rated in hooping-cough. One or two may be of use when the disease is forming; and they may be exhibited now and then, in the latter stages,

when the expectoration is not easy, and when we know, by auscultation, that the bronchial tubes are over-loaded with mucus. I have found an antimonial emetic the best, if at the same time there be any febrile disturbance; but should the emetic be merely wanted to unload the tubes, and particularly if the patient is weak, perhaps one composed of the sulphate of zinc will be found preferable, as it generally leaves no sickness or depression.

Gentle purgatives are to be used for the purpose of keeping the bowels easy; great mischief is frequently done by the constant exhibition of drastic medicines, for weeks together. Many practitioners seem to forget, that the long continuance of powerful medicines will certainly produce great disorder of the bowels, and consequently foul evacuations.

The antiphlogistic regimen, and confinement to one apartment, at least during the first part of the disease, are essential circumstances to be attended to in the treatment. An occasional opiate, and a warm bath, will be often found of service as auxiliary remedies.

Blisters in some acute cases, are actually necessary for the purpose of translating the inflammatory action to the surface; but except in such instances, the counter-irritation produced by the tartar-emetic ointment, will be found most efficacious. This plan was first recommended by Autenreith. It has frequently occurred to me to observe, during epidemics of hooping-cough, that those affected were sometimes attacked with measles, scarlatina, and even small-pox, the cases being much aggravated during the eruptive fever; but subsequently upon the appearance of the eruption, the phenomenon of the hoop, which gives the character to hooping-cough, became very much moderated,—in two or three cases it entirely ceased, but it generally returned when the eruption declined; a very pretty instance of which, is related in Dr Ferrier's excellentwork already quoted: "Miss ——, aged one year and a half, had the hooping-cough in a slight degree for some weeks. When it seemed to be leaving her, she was seized with the measles, and there was an appearance of a very large crop of the eruption. Her cough was not very troublesome, and no longer resembled the hoop-

ing-cough. On the third day she was seized with an extreme degree of dyspnœa, and a short harassing cough, and the eruption almost entirely disappeared. The pulse became innumerable. Leeches were applied to the extremities, blisters were applied to different parts of the body, and every method was used to renew the eruption, but without success. The cough increased, but the dyspnœa began to relax, and at length, to my great satisfaction, the type of the hooping-cough was renewed, and my patient recovered, by time, and change of air. Not one spot of the eruption of measles, ran its usual course."

Dr Watt notices the same fact, and it now appears strange that so obvious a circumstance had been overlooked, as it is evident that the irritation was removed from the wind-pipe, by the cutaneous eruption.

The plan of Autenreith occasions an artificial eruption, exceedingly like small-pox. He considered it a certain specific, when a copious crop was produced on the epigastric region; and he distinctly assures us, that the use of the ointment for twelve days produces a cure: but the result of my practice does not authorize me to make the same statement, therefore I am persuaded Autenreith could not have met with such severe cases as I have occasionally happened to treat, particularly in the epidemic which existed in Edinburgh about four years ago. His theory of its action, however, perfectly coincides with mine, that "when the irritation is well established, it acted by directing the blood to the surface from the air-passages." It may be shortly stated, that I have seen it very serviceable in this disease, so much so, that I always have recourse to it; and it is a far more beneficial method of producing irritation in sub-acute and chronic inflammations, than that by blisters, because it is more permanent. The proportion of tartar-emetic in the ointment, is a drachm to the ounce. The antimony may also be applied, by sprinkling it on the surface of a pitch or warm plaster.

Several curious circumstances have attracted my notice, with reference to the external application of this remedy. In five or six cases, when it has been rubbed over the epigastric region, violent vomiting has been produced, which was proved

to be owing to the antimony, by leaving off the ointment, and returning to it several times. When applied to the chest, the eruption frequently appears on the genitals and groins; when this was first observed, I thought it had been produced by negligence, but have since seen the same circumstance, in cases where every care was taken to prevent any accidental application to these parts.

When the internal disease is severe, it is difficult in general to establish the cutaneous irritation by the application of the ointment. I have remarked in three cases, when indiscriminately applied over both sides of the thorax, that the eruption did not appear on that side in which the diseased action was most violent, while there was a copious crop on the other; and in one of the cases, the line of demarcation was exactly in the mesial plane.

Dr Cullen, from the hypothetical notion that the disease continued during the second stage, merely by the power of habit, recommended antispasmodics or tonics; he therefore advised opiates and Peruvian bark. Dr Hufeland likewise recommended belladonna, considering the disease to be of a true spasmodic nature; he gave it in doses of a quarter of a grain morning and evening, to children between three and six years of age. As tonics, small doses of zinc, arsenic, and nitrate of silver have been employed. In Russia, the berries of the spurge laurel are said to be specific; they are employed, it would appear, as stimulants and antispasmodics. The sulphate of alumen and garlic have also been highly extolled. But it would be no slight task, to give even a list of all the remedies which have been strongly recommended.

During recovery, it is of the greatest consequence to attend to the clothing, diet, and exercise of the patient; I have frequently traced relapses to cold feet, and to indigestible food. Laxatives are also necessary, and the cold bath is in great estimation with some practitioners; of which last, I cannot give an opinion: but I have seen the greatest advantages in this disease, and many other cases of chronic bronchial affections, from sponging the body all over with water, or vinegar and water, two or three times a-day. Change of air is extolled by some individuals, but is often productive of great mischief, by

occasioning a return of the disease. It is an important fact, that during the late epidemic, which, as has been stated, was the most severe I have ever witnessed, all the children that were moved for change of air had the disease the longest. The children of two families, who had the disease in the very slightest form, were taken to the country when nearly cured; most of them had relapses, not only upon going away, but also after returning. The cause of relapse, in such cases, is easily explained; the patient may be moved from a warm situation to a damp, cold one; or he may be put into a damp bed; or a change of weather may take place when on his journey. It is a common practice to send hooping-cough children to play a considerable part of the day in tan-yards; but really the contemptible pathological notions upon which this practice is founded, are a disgrace to the profession.

CHAP. III.

PNEUMONIA.

This disease has been described by a number of names, as Peripneumonia, and Pneumonitis; the term Pleura-peripneumonia, is employed to express the co-existence of inflammation of the pleura and lungs.

Phenomena.—Like other acute diseases, pneumonia commences with shivering, followed by a hot stage, which is in general pretty violent, unless in congestive inflammation, when the coldness predominates. There is more or less dyspnœa, and the number of respirations considerably exceed twenty in a minute, which may be taken as about the natural standard. The breathing is in some cases very laborious, but we must be careful, as Andral very properly remarks, not to allow ourselves to be led astray by the account which patients give respecting this point, for often, when the respiration is short and hurried, they will assure us that they do not feel the least impediment. Pain is not a well-marked symptom in inflammation of the substance of the lungs, the patient complains rather of a tightness in the thorax; and when pain exists, it is in general dull instead of sharp. The cough is short, perpetual, and does not come on by fits. At first it is dry, very distressing and obstinate. The expectoration is scanty, viscid, and discoloured, from an admixture of blood; sometimes it is bright like red currant jelly, but in

general, it is rusty-looking, resembling brick dust intimately mixed with viscid mucus; it is so tenacious, as to adhere firmly to the sides of the vessel into which the patient spits. It is very important to attend to the colour of the expectoration, not only in assisting us in determining the nature of the disease, but also its extent and severity.

The pulse is variable in many respects, and practitioners should be very wary in depending upon it, in the confident manner so generally followed, and more particularly in pneumonia, which I have known many a time to go on rapidly to a fatal termination, the pulse never exceeding the natural standard. Morgagni noticed the uncertainty of the pulse in pneumonia long ago. Sometimes, when the inflammation is most intense, it is observed to be extremely small. Many suppose that recovery is rare, when it beats more than 130. Andral makes this remark, and I have no doubt, from the milk-and-water practice which is too generally adopted by French practitioners in inflammations of important organs, that they may find it so. I often perceive the pulse to rise both in frequency and force after bleeding, when the disease is fast subsiding; in many constitutions it increases in frequency in consequence of considerable depletion, even when the disease is declining.

With respect to the heat of skin, I have the same remark to make; for although in many cases it may be hot and dry, yet in some instances, it may even be below the natural standard.

The tongue soon becomes parched and dark-coloured; a dry glossy tongue is always a bad symptom.

It has been too generally stated in books and in lectures, that the face usually becomes livid and discoloured in pneumonia,—which is an error, as it is more a symptom of bronchitis, than of inflammation of the substance of the lungs.

Delirium occasionally takes place, but it is far from being a general symptom; when it occurs early, it denotes danger. Mental aberration often occurs, however, after acute diseases in the chest and abdomen have been subdued, particularly by extensive bleeding; which in general soon yields to the use of opiates and stimulants prudently administered.

Much misconception exists respecting position in chest affections. It is pretty generally believed that patients lie on the affected side. This is very much the case in pleuritis, and in single bronchitis; but in pneumonia, they are generally found on the back, particularly in severe cases.

In the very severest forms of pneumonia, particularly where a large portion of the lung is inflamed, and in which extensive effusion into the air-passages takes place, or in cases complicated with considerable local congestions, the powers of life quickly give way to disease, attended by symptoms which are generally denominated typhoid. In truth, this form of the disease has obtained the name of *pneumonia typhoides*. There is undoubtedly such a form of pneumonia, but I object to the adjunct *typhoides*, as expressing erroneous ideas of the pathological condition of the body. It was very prevalent during the war, among troops stationed in exposed situations along the coast, and in large garrisons where the duty was very severe. The soldiers were often seized with it when exposed at night as sentinels; instead of walking about, they often stand shivering in their sentry-boxes, the surface continues long chilled, and with a view to fortify themselves, and to produce warmth, they are in the habit of drinking ardent spirits in considerable quantity. In the strongest subjects, I have seen the disease, under such circumstances, run its course to a fatal termination in from forty-eight to sixty hours. Remissions of this complaint sometimes take place, and it is too much the custom at such times, either to omit the necessary remedies, or to be too solicitous about supporting the strength.

The only certain test of the presence of pneumonia, is that derived by auscultation; and in considering this part of the subject, the disease must be divided into stages. In the first stage, or that of invasion, the crepitous râle is heard distinctly, and it resembles the noise which is produced by sprinkling finely powdered salt on the fire. This râle exists also in œdema of the lungs, and pulmonary apoplexy, but these are distinguished from pneumonia by the other symptoms. In this stage, the sound produced by percussion does not differ from that of health. When complete solidification has

taken place, neither the crepitous râle nor the respiratory murmur are heard; but in the sound part of the lungs, the respiration will be heard louder than natural, which is called by Laennec "puerile respiration." Laennec says, that bronchophonism exists in certain cases, particularly if the inflammation is seated near the roots of the lungs, or in the upper lobes, in which places the bronchial tubes are the largest. In this second stage, percussion elicits a dull sound over the affected parts, unless the inflammation is confined to a small central space in the substance of the lungs. In the third stage, when the infiltration of pus-like matter begins to take place in the pulmonary tissue, the mucous râle is perceived to a greater or less degree, which Laennec supposes is produced by the introduction of the fluid into the bronchial tubes; when a large portion becomes softened, he calls it an abscess, and says that a very strong mucous or cavernous râle is perceived over its site, with pectoriloquism.

When resolution takes place before the disease has run into solidification, the crepitous râle becomes daily less perceptible, while the natural sound of respiration increases, and becomes gradually more distinct, and at length is heard without the least crepitous sound; but if solidification has taken place, the cure is invariably accompanied by the return of the crepitous râle, and then as that declines, the respiratory murmur becomes more and more distinct.

I have thought it best not to be too minute in this description, by avoiding the varieties and combinations of these sounds, believing they only tend to puzzle the beginner. He may afterwards improve himself, and compare his observations with Laennec's statements; besides which, every professional man ought to possess Dr Forbes's translation, which contains so much excellent matter. But it is my duty to confess my belief, that few can ever expect to arrive at that degree of perfection which Laennec possessed in the detection of all the varieties which he has described.

I have seen two cases within these two years, in which pneumonia existed in one lung, and severe bronchitis in the other; nay, they may exist in the same lung, which of course will mask the crepitous râle.

Inflammation oftener attacks the right lung than the left; rarely both lungs. The inferior lobe is also much more frequently the seat of inflammation than the others.

Appearances on Dissection.—On examining the lungs, or any portion of them, in the first stage of inflammation, they will be found red, from the quantity of blood contained in the vessels of the part, and increased in weight. In the second stage, that of solidification, to which Andral applies the term "softening," and Laennec "hepatization," the diseased part will be readily broken down between the finger and thumb, which cannot be effected in the sound state, and the lung has lost entirely the crepitous feel; if put into water, it will sink at once to the bottom of the vessel. In the third stage, the lung, when cut into, is found to contain a great quantity of reddish or greyish fluid, which oozes out from every point.

The formation of an abscess, is one of the rarest circumstances in pathology. I have only seen one, or at most two instances of it. Laennec says he has only seen it five or six times. The granular appearance of an inflamed lung is best seen by tearing it: it seems to be agreed, by the best pathologists, that this is produced by the concretion of matter in the minute air-cells. The appearance of an abscess in the lungs, is sometimes occasioned by an effusion of lymph, which takes place on the pleura, between the lobes; adhesions form round the circumference of the effusion, and when a section of the organ is made, upon a superficial view it is hastily concluded to be an abscess.

A tubercular excavation is also frequently mistaken for an abscess: the history of the case, the appearance of the rest of the lung and that of the parietes, will put the inquirer right. The parietes of a cavern are solid, generally hard, lined with a false membrane, and it usually contains portions of broken down tubercle. The large air-tubes will also be found to contain a secretion, commonly of a grey or reddish colour.

In cases of pneumonia, when the substance of the lungs, near the surface, has been the seat of the disease, the contiguous pleura almost always suffers; hence we frequently see false membrane, effusions of various degrees of consistence,

and adhesions, which, if recent, will be easily separated, but if ancient, will be found very firm, and sometimes when partial very much elongated.

When the lungs have suffered from chronic inflammation, then, in the language of Andral, they will be found in a hardened state. When cut into, the knife gives a sensation as if it were going through cartilage. In this hardened condition, the substance of the lungs sometimes looks grey, at others red; when it is of a grey colour, it frequently has the appearance of Aberdeen granite.

It has not been yet determined in what tissue the disease primarily commences. Some suppose it is in the cellular membrane; others in the air-cells themselves. I have not been able to satisfy my own mind on the subject, but my present impression is, that it is not situated in the air-cells.

Treatment.—The lancet is to be used freely, and may be employed later, with less injury to the patient, than in bronchitis; but we must be guided very much by the stethoscopic signs, by which much blood and strength will occasionally be saved to the patient. I trust no arguments need be used to prevent British practitioners from following the example of the French, who bleed frequently, but in small quantities at a time; indeed, Laennec states that he rarely repeats venesection, except in the cases of patients affected with diseases of the heart, or threatened with apoplexy, or some other internal congestion; and when he does bleed, he directs from eight to sixteen ounces to be taken from the arm, and he even boasts of curing pneumonia without blood-letting. (Page 250.)

Even on this side of the water, bleeding is frequently not followed up as it ought to be. Dr Mason Good, (at p. 436, vol. ii.) in treating of pneumonia, says, "In this case the bleeding should be prompt and copious, at least to eighteen or twenty ounces, and repeated twelve hours after if necessary." I object strongly to this recommendation, both as to the quantity of blood to be drawn, and the long interval between the bleedings; but the reader is referred to the observations already made when treating of peritonitis.

Late in the disease, however, bleeding must be used in small quantity, and with the greatest caution. The great use of auscultation in treating pneumonia, is, that in general the practitioner is accurately informed not only with regard to the extent of the disease, but he is told if the sanative process have commenced, when bleeding is, to say the least of it, a doubtful remedy, and in many cases may do harm, by interfering too much with the powers of the constitution. Nevertheless I am persuaded, from experience in treating the disease, and from examinations after death, that much more mischief is done by bleeding too little, than by bleeding too much; but I am not an advocate for the heroic practice of taking seventy or eighty ounces of blood at one operation: the largest bleeding which I believe I ever took in my life was fifty-six ounces. In general, if the operation be properly performed, thirty or thirty-five ounces will suffice, but the patient should be seen again in the course of two or three hours.

I have the history of a case before me, in which one hundred and ninety-two ounces were taken from one individual; but I am persuaded, that if he had lost two-thirds less it would have been better for him. Several months afterwards he was weak and miserable, and it appeared very doubtful whether he was ever to regain his health. On one occasion, early in life, I very nearly lost a patient, from whom I had taken, at different times, in the course of four days, one hundred and twenty ounces of blood, but who recovered after the exhibition of stimulants; and I have seen several cases, within the last ten years, to which I have been called in, where considerable injury had been inflicted by very large bleedings, the medical attendants having allowed themselves to be misdirected by the continuance of dyspnœa, which increased after each abstraction of blood. It was evident that this was owing to a want of sufficient blood in the system. In one instance, the patient was on the very brink of the grave, with a pale, sunk countenance, and cold extremities: the strongest stimulants were administered, along with opiates. All these cases eventually recovered.

Antimony is of essential use in the treatment of pneumonia; but I would reverse the rule laid down by Laennec, and state

that it is to be used as an auxiliary remedy only. Cullen, (in the 371st paragraph,) in alluding to antimony, says, that he has found it useful to exhibit nauseating doses, and in a somewhat advanced stage of the disease, that such doses proved the best means of promoting expectoration. The Italian physicians, and particularly Rasori, first exhibited the emetic tartar in very considerable quantity, as a cure for inflammatory diseases. Rasori, it would appear, gives twelve grains during the first day, and as much during the night; if the disease be already much advanced, he gives forty or sixty grains during the twenty-four hours, and goes on increasing the dose, till it amounts to several drachms. For much interesting information on this subject, the reader is referred to a long note by Dr Forbes, in his translation of Laennec, p. 263.

Laennec, who adopted the Italian practice in France, immediately after a small bleeding, gives one grain of tartar-emetic in three ounces and a half of fluid, which he repeats every second hour for six times. He then omits the medicine for seven or eight hours, if the symptoms are not urgent; but if the disease had already made progress, if the oppression were great, with affection of the head, or if both lungs, or one whole lung were attacked, he continued the medicine uninterruptedly, in the same dose, and after the same interval, until an amendment took place, not only in the symptoms, but indicated also by the stethoscopic signs. "Sometimes even, particularly when most of the above mentioned unfavourable symptoms are combined, I increase the dose (says he) of the tartar emetic to a grain and a half, two grains, or even two grains and a half, without increasing the quantity of the vehicle. Many patients bear the medicine without being either vomited or purged," (Translation, p. 251.) Indeed, it is an extraordinary fact, that the more severe the disease, the less visible effect has the antimony on the patient. This observation applies not only to pneumonia, but to bronchitis, in which very large doses do not produce vomiting, which is very difficult to bring about by any means we possess. My experience in the use of antimony, and the result of the experiments which are published in the Lancet, (vol. ii. p. 536.) lead me to conclude, that

vomiting is more speedily produced by a small quantity dissolved in a large quantity of water, than a large dose of the drug mixed with a little sugar; but the nausea is more severe, and of longer continuance. Laennec states that its most constant effect is the rapid resolution of inflammation, and sometimes the equally speedy absorption of the inflammatory effusion. The latter statement is well proved in the case of Pemberton, the subject of my second experiment, who was affected with "induration and enlargement of the testicle, which was of a scirrhous hardness." His first dose of the medicine was twelve grains, mingled in half an ounce of water, and taken upon an empty stomach: vomiting was not produced for fifty-five minutes. On the following day, the report states that the enlargement of the testicle was found to be diminished about one-third. In some days afterwards, he again took twelve grains in an ounce of the decoction of bark: vomiting did not take place till the expiration of an hour. Again he took, sometime after, twenty grains in a little sugar, and suffered much less pain and nausea from this quantity than during the preceding experiments. On the following day, the report states, that "the enlargement of the testicle continued to decrease:" in a short time after it was found to be considerably reduced, and was soon quite cured. This man had been many months on the sick-list; the disease had previously resisted all the usual remedies, and the question of extirpation was agitated.

I have no faith in digitalis in the ordinary doses, at least during the acute inflammatory stage. Blisters will be found useful, under the same restrictions as described in bronchitis. I have seen the best effects from opiates, during the decline of the disease, in allaying irritability, the violence of the cough, and producing sleep. Formerly great objections were entertained against the employment of purgative medicines in this disease; but these are now removed. It is certainly necessary to keep the bowels open; for which purpose, I generally give a smart dose of physic immediately after the first bleeding, and some hours before the exhibition of the tartrate of antimony, and assist its operation by means of injections. Subsequently, if the antimony do not operate upon the bowels,

evacuations are to be produced daily by persevering in the injections, as no medicine taken by the mouth will be retained upon the stomach.

The regimen, it is almost unnecessary to remark, should be strictly antiphlogistic; and with a view to prevent vomiting during the antimonial treatment, as little liquid as possible is to be allowed. During recovery from all acute diseases of the chest, visitors should be excluded, as talking, even in an under tone, is injurious to the patient.

CHAP. IV.

PLEURITIS.

Phenomena.—As in other acute diseases, this is generally ushered in by a cold stage of greater or less severity. The patient complains of fixed pain in the side, over which he can place his finger, which is described as a stitch, catching and interrupting his breathing every now and then, particularly when he fills his lungs beyond a certain extent. The pain is sometimes so severe, that the patient, in describing it, says it is like a stab with a sharp instrument. In pleuritis the breathing is difficult and anxious; but it is short, and not so heavy and oppressed, in the first instance at least, as in inflammation of the other tissues. There is also cough, which aggravates the pain very much: the expectoration is thin and watery, very different from that in pneumonia and bronchitis. The pulse, generally speaking, is quicker and harder, and the heat of skin is more intense than in pneumonia and bronchitis; but I have already shewn, that inflammation of the pleura, the most intense and extensive, may take place, and terminate fatally, just like peritonitis, without being detected by these symptoms. At present, I may remark with regard to the heat of skin, that it is greatest over the thorax in pleuritis, and very often I have felt it much increased over the seat of the disease, at which point external pressure is much complained of. The tongue, however much furred it may be, soon becomes dry. The urine is scanty, and high-coloured. The functions of the brain are also sometimes disturbed.

There is a painful affection, commonly ascribed to the intercostal muscles, and termed pleurodynia, which gives rise to all the symptoms above described, and it is impossible to determine the one from the other by means of the ordinary symptoms, and which can alone be distinguished by auscultation. A symptomatical physician may now and then guess right, but it is only to be considered as a guess, for it has already been stated that three cases occurred to me within a very short space of each other, only one of which proved to be pleurisy, although from the slightness of the symptoms, and the character of the patient, who was always complaining for trifles, I least expected to find it. Dr Ferrier, (at p. 86. of his 2d vol.) after stating the case of a boy, who died from extensive inflammatory action of the pleura, and effusion into the pericardium, who nevertheless had "no cough, no difficulty of breathing, nor pain in his breast, and I could not find, (says Dr Ferrier,) from the most careful inquiry, that he had ever made such complaints. There was great paleness over the whole skin. He was torpid; without delirium, or the symptoms of oppression common in typhus." In his observations upon this case, he states, "In this case, an active inflammation through the whole extent of the pleura, producing exudation and adhesions, was not indicated by any symptom during the continuance of the complaint."

Stethoscopic Signs.—In pleurisy these signs are of less importance in directing the treatment, than in pneumonia and bronchitis, because there is no particular sound elicited by the stethoscope in pleurisy, till the inflammation has run to its ultimatum, and has produced effusion; but great advantage is nevertheless obtained from the negative proof afforded by auscultation, which will inform us if either of these two diseases exist. Independent of this, however, the stethoscope is of use in pleuritis, by informing us when effusion really exists, which, it is admitted, cannot be done by the ordinary signs.

In the early stage of pleuritis, the respiratory murmur is less distinct, but not otherwise changed, over the site of the diseased part. When the effusion takes place, the sound in

the lower part of the chest becomes dull, and when the patient is desired to speak, his voice is heard through the stethoscope, at the diseased part, small, sharp, and very tremulous, to which Laennec has given the name œgophony. When the effusion is very extensive, and in considerable quantity, the sound elicited by percussion is very dull, and the sound of respiration is not heard, unless at points where old adhesions exist, which prevent the lungs from being compressed and forced away from the ribs. On examining the naked chest, when there is great effusion, that side of the thorax is perceived to be the largest; the ribs are found more distant from each other, and to be more fixed during respiration, than on the healthy side. Œgophony also exists in hydro-thorax; but this is of little consequence, as the general history of the case, and local symptoms, must always be appealed to, and weighed as necessary parts of the evidence in each case.

It must always be recollected, that pneumonia and pleurisy frequently co-exist; but neither is that circumstance of much consequence, being both inflammatory diseases, requiring the same general remedies.

Appearances on Dissection.—The pleura, when inflamed in the first stage, shews a great number of red points, which are sometimes produced by slight ecchymosis in the cellular membrane, beneath the pleura; red vessels are also to be frequently observed, and the spaces between the vessels, and between the punctæ, appear natural. The pleura is rarely found thickened, although it may appear to be in that state, the deception arising from the deposition of coagulable lymph, which, when removed, shews the pleura without alteration of structure. It has frequently occurred to me, in chronic pleuritis, to be able to separate what appeared to be two and even three layers of new membrane. There is often found extensive effusion of a serous fluid like whey, exactly similar to that seen in the abdomen in peritonitis. Sometimes we find the lungs attached to the pleura lining the general cavity, by an intermediate deposition of lymph; when recent, the parts are easily separated, and there is the best evidence for believ-

ing that the new matter becomes organized. Occasionally (particularly in chronic pleuritis) we find both the pleura pulmonalis and costalis inflamed, and very much thickened by the deposition of lymph, with an immense effusion of serum mixed with coagulable lymph, and which has a resemblance to thick pus; besides which, large detached masses of lymph, weighing half an ounce or more, may be found in the bottom of the cavity; and if there be no old adhesions, the lung will be found compressed into a very small space lying close to the spine, which, when cut into, frequently displays no alteration of structure: but I shall say more on this subject when treating of empyema, which, although the effect of pleuritis, requires a separate notice. Mortification is one of the rarest results of inflammation of the pleura. Ulceration is also rarely met with; but I have happened to see two instances in which the ulcerations were extensive, and affected not only the pleura pulmonalis, but also the costalis, as well as that part which forms the mediastinum. In one case, the particulars of which are preserved, together with a very beautiful representation, on exposing the contents of the thorax, six large ulcerated spots were observed upon the anterior surface of the right lung, one of which was two inches in length, and above an inch in breadth, occupying almost a regular oblong space,—the rest approached to the circular form. There were eight or nine ulcerations on corresponding parts of the pleura costalis, of an oval shape,—one very large; there was also one above two inches in length on the mediastinum. The pleura was very vascular, and the margin of each ulceration was red, thickened, and somewhat indurated; no trace of the pleura could be perceived on the ulcerated surfaces, except here and there a small ragged portion was met with. The ulcers were covered with a matter, whether lymphy or puriform, could not be determined. This lung was somewhat compressed, and on making incisions through the ulcerated parts, its substance was found to be red and hard; but which extended to no great depth, some places not greater than a line, and no where more than about the third of an inch; the rest of the organ being in the state of engorgement. In this case, which I did not see till

within a few hours of the fatal termination, no suspicion was entertained of the true nature of the affection; the treatment was conducted by two physicians, for whose talents and practical experience I entertain the highest degree of respect; but it may be mentioned that neither of them used the stethoscope. At first, it was supposed there was some pulmonary affection, for which the lancet was used; but very soon the vital powers began to sink, after which the disease was denominated typhus fever, and treated accordingly.

Treatment.—Little need be said respecting the treatment of pleurisy, farther than that bleeding is to be had recourse to repeatedly and copiously. In this case, however, leeches are often of very singular benefit, applied over the seat of the pain; and in slight cases, in subjects not particularly plethoric, may be entirely trusted to; but it will be found best, in general, to reduce plethora by one decisive bleeding in the first instance. Antimony is also to be employed, together with laxatives and an occasional opiate. The antiphlogistic regimen is absolutely required, and blisters are often found useful.

In pleurodynia, a warm bath, and a dose of Dover's powder, will, in general, be sufficient to mitigate the violence of the pain; a bandage, placed tightly round the thorax, is also serviceable, by preventing the motion of the ribs. A good practical man, however, will always be found to act on the safe side; and when in doubt, he makes it a rule to give the patient the benefit of that doubt, by employing the means required in the more severe disease.

I have only further to state, that relapses, in all inflammatory complaints of the chest, are generally to be attributed to imprudence in diet, and to the too early exertion of speaking; therefore it is always safer to continue the antiphlogistic regimen a day or two longer, than to allow food to be taken a single day too soon. The practitioner, however, finds himself often foiled on both these points, by the imprudence of patients and attendants; under such circumstances, it is an excellent plan to keep the patient, as slightly as possible, under the influence of antimony, which will prevent the generality of people from feeling even an inclination to eat or speak.

CHRONIC PLEURITIS.

According to Laennec, there are three kinds of chronic pleurisy:—1*st*, That which is chronic from its origin. 2*dly*, Acute pleurisy becoming chronic. 3*dly*, Pleurisy complicated with certain organic productions on the surface of the pleura. But I shall follow a different plan in this work, by first describing the chronic pleurisy which terminates in empyema, and afterwards that which terminates in permanent contraction of the chest.

Empyema.—This term implies the existence of matter in the chest, the effect of chronic pleurisy, or the bursting of a pulmonary vomica into the cavity of the pleura; but of this last affection I shall speak after treating of phthisis. Whether the empyema be produced by a pleurisy which was chronic from the first, or considered as the termination of the acute form of the disease, the effect is the same,—there being generally dyspnœa, the breathing being easier in the erect posture; dry tickling cough; hectic fever; enlargement of the side of the thorax when compared with the other, the intercostal spaces being encreased; the patient cannot lie except on the diseased side: sometimes fluctuation may be felt. This form of the disease appears to have been well known to Hippocrates, but he confounded it with pneumo-thorax *.

Stethoscopic Signs.—Percussion gives a dull sound, and the respiratory murmur is not heard, which will be puerile on the other side; but here we must recollect, that the effusion may be double, although this is a rare circumstance.

After this is discovered, the sooner the chest is tapped the better; and several remarkable recoveries have taken place, shewing that there is still some hope. There is, however, some difference of opinion respecting the propriety of drawing off the matter all at once, or by degrees. Although my experience on this subject is not great, yet I am induced to believe, the more quickly the matter is removed the better. A most interesting case, successfully treated by Dr Pitcairn of Edin-

* An excellent paper on Empyema, &c. by Dr Duncan jun. is to be found in the 93d No. of the Edin. Med. and Surg. Journal.

burgh, is recorded in the 2d vol. Edin. Med. Chir. Transactions, p. 229. During recovery, we should be on our guard to prevent, by means of regimen, a renewal of the inflammation. Instances are upon record, in which matter has found its way out of the chest through the parietes, and sometimes through the bronchial tubes.

The other kind of chronic pleurisy to which I wish to allude, is that which leads to permanent contraction of the chest. The distortion is readily perceived on looking at the naked chest; the affected side is found to be narrower than the other, and the length is equally diminished in consequence of the ribs being drawn closer to each other. The muscles are also much smaller, which may cause deception as to the real size of the chest itself. The patient leans also to the side of the deformity; in many cases so much so, as to give an appearance as if he had an affection of the spine; this happened in Dr Pitcairn's case above quoted.

Laennec states, that it was long before he had an opportunity of ascertaining to what cause the contraction was owing, which he at last discovered to depend on fibro-cartilaginous adhesions between the pleura pulmonalis and costalis. He nevertheless thinks that a degree of contraction is produced by the common cellular adhesions when very extensive; for he states, that in every case wherein he found one lung adhering throughout, by means of a pretty copious cellular tissue, he has always thought that side of the chest narrower than the other. I have had an opportunity, during my life, of seeing several cases of contraction of the chest: One within these few months, where the contraction was in the left side, and evidently connected with some affection of the heart and pericardium. There are reasons which prevent me from saying much about this case, farther than that the man's health seems to have been sacrificed by ignorance. About a year ago, when accidentally at Chichester, Dr Forbes, the accomplished translator of Laennec's work, was kind enough to take me to see a patient who was affected in this manner, succeeding, if I remember rightly, to a severe attack of acute pleurisy *.

* Hydro-thorax will be treated of in the chapter on Dropsy, in the 2d vol.

CHAP. IV.

HŒMOPTYSIS.

THIS term signifies a discharge of blood from the air-passages, which occurs principally under three forms:—1*st*, A general exhalation from the mucous surface of the bronchial tubes. 2*dly*, From apoplexy of the lungs. 3*dly*, From an erosion of a blood-vessel in a tubercular excavation in the lungs, and which falls to be considered when treating of phthisis.

The first variety is the most common, and is not generally attended with much danger. It frequently attacks women at the monthly periods, when the menstrual discharge is more scanty than usual, or is entirely suppressed; girls are often so affected at the age of puberty, immediately before the catamenia should appear; but the male sex are not exempt from it. I have seen it appear in men, upon the drying up of an old sore, and the disappearance of a long-standing eruption; it sometimes also succeeds to mental affliction. The discharge is generally preceded by some constitutional disturbance. The bowels are found to have been out of order, the tongue foul; the patient has passed somewhat restless nights, with more or less fever, feeling most comfortable in the half-erect posture. At last there is cough, which is often constant and distressing, with more or less dyspnœa, particularly when moving about. The pulse varies much according to the age and constitution of the patient, and the period of the disease; but generally it is quick and bounding. I have commonly seen this form of the disease creep on insidiously; but at the same time it must be confessed, that the bloody

expectoration sometimes takes place suddenly, immediately after the occurrence of cough and dyspnœa. The expectoration has something very peculiar in its appearance; it resembles red currant-jelly,—sometimes not so much tinged, resembling a mixture containing different proportions of apple-jelly along with red currant, being sometimes very copious, but in general the quantity discharged is moderate. It is easy to distinguish between the expectoration in pneumonia, and that which takes place in this form of hœmoptysis. In the former, it is scanty, viscid, and tenacious; not so in the latter. Sometimes, however, the expectoration is of a mixed kind, small masses of coagulated blood being observed now and then; occasionally, indeed, the discharge is quite bloody, but moderate in quantity, and very frothy. On all occasions, it is much increased by every exertion, either corporeal or vocal. According to Laennec, the chest is perfectly sonorous. On applying the ear, the crepitous râle is not heard as in pulmonary apoplexy; but there exists a mucous râle, which is more or less extensive, according to the quantity of blood effused into the air-passages.

Appearances on Dissection.—I have never seen a dissection of a person who died of this form of the complaint; but Laennec states, that, "on examining subjects who have died of bronchial hœmorrhage, or while labouring under it, more or less of coagulated or fluid blood is found in the bronchia. On the surface of the coagula, we sometimes observe fibrinous concretions in the form of polypi. The mucous membrane is commonly a little softened, and is impregnated or tinged with blood through its whole depth *."

Treatment of the first variety.—This is in general very simple. Blood-letting is not necessary, unless the patient is plethoric, or there are marks of an irregular determination of blood, which we wish to remove from the lungs, in which case one bleeding will in general suffice. The leading points to be attended to, are the following:—Perfect rest, silence, abstinence

* Forbes's Translation, page 128.

from every stimulant; the smallest quantity of food is to be taken at a time: The patient should be placed, if possible, in a large, cool apartment, with light clothing; and a pretty smart action is to be kept up on the bowels, by means of frequently repeated laxatives. If, however, the discharge still continue, with a strong pulse, small doses of the tartrate of antimony are to be used, so as to produce the slightest degree of nausea; but the most potent remedy with which I am acquainted, is the acetate of lead, which I commonly prescribe in such cases, in doses of two, three, or four grains every third or fourth hour; but I never use it till the plethora is considerably reduced. A great many other astringents have been employed, as sulphuric acid, alum, kino, the bark of the pomegranate, and the ratany root.

The second variety, or that which proceeds from pulmonary apoplexy, is marked by a greater degree of hæmorrhage, which is sometimes so violent as to resist all medical treatment; and the pathology of which was, as Dr Forbes very properly remarks, entirely unknown before the publication of the first edition of Laennec's work, although (as he has also shewn) some obscure notices had been given by others before that period.

Symptoms.—This disease is, in general, preceded by symptoms common to hæmorrhages from other parts of the body; such as chilliness,—cold extremities, followed by flushes of heat and redness of the cheeks, head-ache, quick and extremely hard pulse,—palpitation of the heart. The discharge from the lungs is attended by dyspnœa,—suffocating feeling in the chest, sometimes, according to Laennec, by great pain,—oppression at præcordia,—sense of rawness of the throat, and a saltish taste in the mouth. The expectoration consists of bright and frothy, or black and clotted blood, quite pure, or merely intermixed with saliva or a little mucus. The pulse is frequent and full, with a feeling of vibration; the heat of skin is not considerable; sometimes I have seen profuse perspiration. The spitting of blood is copious, returning by fits

with cough, oppression, anxiety, intense redness or extreme paleness of the face, and coldness of the extremities. These last mentioned symptoms are the most frequent and striking. When the hœmorrhage is very great, says Laennec, "it comes on sometimes with a very moderate degree of cough, and is accompanied by a convulsive elevation of the diaphragm, like that which takes place in vomiting. This accounts for the expression, "*vomiting of blood*," which is used by most persons who have suffered in this way. He thinks, however, that part of the discharge very often comes from the stomach, and that hœmatemesis frequently co-exists with hœmoptysis. Laennec has known ten pounds of blood lost in this manner in forty-eight hours, by a young man who died under the hœmorrhage. In other cases, he has seen about thirty pounds lost in a period of fifteen days; but, in general, the discharge does not exceed three or four gills in twenty-four hours, and in some cases, only three or four ounces.

Percussion, in general, gives no information. Auscultation, however, furnishes us with two principal signs of the pulmonary apoplexy,—the want of the sound of respiration over a circumscribed space, which may be more or less extensive, and a crepitous râle round this space.

Appearances on Dissection.—Having had few opportunities of observing these appearances, I have taken the liberty of copying Laennec's account. "Some part of the pulmonary system has undergone great changes, being indurated to a degree equal to the most complete hepatization. The induration, however, is very different from the inflammatory affection of the lungs distinguished by this term. It is always partial, and scarcely ever occupies a considerable portion of the lungs; its more ordinary extent being from one to four cubic inches. It is almost always very exactly circumscribed, the induration being as considerable at the very point of termination as in the centre. The pulmonary tissue around is quite sound and crepitous, and has no appearance whatever of that progressive induration found in the peripneumatic affection. The substance of lung is indeed often very pale around the hœmoptysical induration; sometimes, however, it

is rose-coloured, or even red, as if tinged with fresh blood; but, even in this case, the circumscription of the indurated part is equally distinct. The indurated portion is of a very dark red, exactly like that of a clot of venous blood. When cut into, the surface of the incisions is granulated, as in a hepatized lung; but in their other characters, these two kinds of pulmonic induration are entirely different. In the second degree of hepatization, along with the red colour of the inflamed pulmonary tissue, we can perceive distinctly the dark pulmonary spots, the blood-vessels, and the fine cellular intersections; all of which together, give to this morbid state the aspect of certain kinds of granite, as has been already observed. In the induration of hœmoptysis, on the contrary, the diseased part appears quite homogeneous, being altogether black, or of a very deep brown, and disclosing nothing of the natural texture of the part, except the bronchial tubes and the larger blood-vessels. The latter have even lost their natural colour, and are stained with blood. The veins of the affected part, and also those adjoining, are sometimes filled with a firmly coagulated and half-dry blood. In scraping the incised surfaces of these parts, we can detach a small portion of very dark, half-congealed blood, but in a much less proportion than we can press out the bloody serum from a hepatized lung. The granulations on the incised surfaces have also appeared to me larger than in cases of hepatization. Sometimes the centre of those indurated masses is soft, and filled with a clot of pure blood.

"This morbid affection is evidently produced by an effusion of blood into the parenchyma of the lungs, in other words, into the cells. From its exact resemblance to the effusion that takes place in the brain in apoplexy, I have thought the name pulmonary apoplexy very applicable to it. Some examples have occurred of sudden death from hœmoptysis, wherein the substance of the lungs was found lacerated, and containing clots of blood. Corvisart mentions one extraordinary case of this kind, in which the extravasation had lacerated the lung, and filled the cavity of the pleura. The hœmoptysical engorgement above described, is only a lesser degree of the same affection, in which the effused blood (still in some de-

gree under the influence of vital action) coagulates in the air-cells, in such a manner as to form an intimate union with the pulmonary tissue, very different from what would be produced by the mere physical coagulation of the blood. We sometimes find two or three similar indurations in the same lung, and frequently both lungs are affected at the same time. They take place most commonly in the central parts of the lower lobe, or towards the middle and posterior part of the lungs: it is consequently on the back and inferior part of the chest, that we ought to search for them with the stethoscope.

"This affection is as easily distinguishable from the congestions that take place after death, as from the alterations produced by the peripneumony. The sanguineous congestions of the dead body consist of an accumulation of blood intermixed with serum, often spumous, which flows plentifully on an incision of the part, and tinges the lungs of a livid or vinous colour. Being the mere consequence of gravitation, the engorgement is found most considerable in the most depending parts of the lungs, and gradually lessens towards the superior parts. Where most engorged, the part still retains some crepitation, and the incised surfaces are never granulated, even when the congestion is so great as to destroy the spongy character of the lung. By washing, we can, in every case, remove all the red, and restore the lung to that sort of flaccidity which it possesses when compressed by a pleuritic effusion. The engorgement of hœmoptysis, on the contrary, is accurately circumscribed, very dense dark-red or brown, granulated, and almost dry when incised, and grows pale by washing, but without losing any part of its consistence. Whatever may be the severity of this disease, resolution seems to take place with considerable facility, since we find a great many cases of recovery after severe hœmoptysis. I have not had many opportunities of tracing the progress of this resolution by morbid dissection; but in the small number of cases which I have met with, it has appeared that the indurated parts passed successively from dark-red to brown and pale-red; and that, in proportion as the colour faded, the parts lost their granular texture and their density. I do not think that this obstruction is followed, at least constantly, by œdema,

as is the case with the obstruction of peripneumony. When the resolution is complete, it leaves no trace of disease in the pulmonary substance, since I have never been able to find any vestige of the induration in subjects who had been affected with severe hæmorrhage at a period of some years—or only some months—anterior to their death *."

Treatment of the second variety.—The treatment depends very much upon the condition of the lungs, the age and constitution of the patient, and upon the quantity of blood already lost. The plan of bleeding, in every case of bloody discharge from the lungs, is very bad; because it is bleeding for a name, without reference to pathological considerations. In this variety, however, copious venesection is to be employed early, and carried to such an extent, as will render a repetition generally unnecessary. It is employed to reduce plethora, and to moderate the action of the heart and arteries,—to change the determination of blood quickly,—and, on some occasions, is to be carried the length of inducing syncope. It requires considerable experience to act properly on such occasions; for sometimes, in very stout plethoric people, we are to endeavour to take away a large quantity of blood, say to the extent of three or four pounds, and to prevent syncope from taking place before we obtain a sufficient quantity,—the operation, therefore, should be performed when the patient is in the recumbent posture. In other cases, we wish to induce syncope, or to alter the tide of the circulation as quickly as possible, and at a small expense of blood; therefore a large orifice is to be made, or a vein in each arm is to be opened at the same time, and the patient kept in the erect posture. It is curious to observe, that Laennec recommends bleeding in large quantities, even to syncope, in this complaint, and pursues quite an opposite course in pneumonia. With regard to bleeding in this disease, he uses the following language:—"But the extreme danger which attends the hœmoptysical induration, and possibility of its resolution, ought to make us boldly use copious venesection from the onset of the disease. One

* Forbes's Translation, p. 184.

blood-letting of twenty or twenty-four ounces on the first or second day, will have more effect in checking the hæmorrhage, than several pounds taken away in the course of a fortnight. *It is even beneficial, in general, to induce partial syncope by means of the first bleeding. In cases of this kind, the fear of exhausting the patient's strength is without grounds, since we know that the most copious venæsection falls short of the loss of blood sustained from pulmonary hæmorrhage, in young and robust subjects, even in the course of a few minutes; while the debilitating effect of the hæmorrhage is infinitely greater than the loss of blood produced by the lancet.*"

After all great losses of blood, whether by the lancet or otherwise, the state of the circulation must be carefully watched;—much more carefully, the larger the quantity; and we must take care not to lose the vantage ground, by subsequent imprudence on the part of the practitioner, or on that of the patient. For this purpose, perfect rest, quietness, and complete silence, are to be enjoined; cool air is to be freely admitted; but I have seen great injury done by keeping the temperature of the body too low, for too long a period, which promotes the tendency to internal congestions. It has been already stated, that one bleeding ought in general to suffice, provided it is carried far enough. The circulation is afterwards to be controlled, by nauseating doses of antimony, the rigid employment of the antiphlogistic regimen, and the constant exhibition of laxatives, so as to produce four or five evacuations in the course of twenty-four hours. But if the patient have lost too much blood before we are called, or should the hæmorrhage continue after sufficient bleeding, then we must trust to the effects of acetate of lead, in considerable doses, which I have seen act in the most wonderful manner, in suppressing even those hæmorrhagies which were afterwards proved by dissection to have proceeded from a ruptured blood-vessel in the lungs.

Drawing blood by leeches, is scarcely ever admissible, unless to mitigate some local pain in the chest, which, however, is better affected by a blister.

If the patient is thirsty, acidulated drinks may be allowed.

Some have recommended ice to be piled upon the chest in such cases, which surely must be a dangerous practice.

Hœmoptysis sometimes takes place in consequence of aneurism of the aorta, of which I have seen three cases, all of which proved fatal; the blood found its way into the bronchial tubes, by absorption and ulceration of that part of the lung which came in contact with the aneurismal sac, and which, in fact, formed at last a part of the sac itself. In two of these instances, the parts were strengthened, and life had been preserved for a considerable time, by the usual deposition of coagulated blood found in aneurisms, till at last the fatal hœmoptysis occurred, and the patients died in a few minutes. In the third case alluded to, deposition of coagulable lymph, had perhaps for a long time prevented the eruption of blood, which at last, however, took place, but was soon suppressed by moderating the force of the circulation by bleeding; but it returned a great many times, and at last carried off the patient almost in a moment. On dissection a considerable portion of the lung was found injured, but the loss was so far repaired by a thick and dense layer of coagulable lymph, the upper part of which was found detached, at which point it was clearly traced the blood had passed into the bronchial tubes, and so far explained how the previous attacks had taken place.

I have also seen hœmoptysis take place, to all appearance, from hypertrophy of the heart; and I once witnessed a dissection, where complete apoplexy of the whole of one lung had taken place, the other having been for years, as far as we could judge from the history of the case, in the most perfect state of hepatization from chronic inflammation. The patient only complained occasionally of attacks of asthma, and experienced much embarrassment in going up hill or ascending stairs. He died in a moment, after discharging a mouthful or two of blood. A drawing, shewing the state of both lungs, and their internal structure, is in my museum.

CHAP. V.

PHTHISIS PULMONALIS.

Phenomena.—If a person is apt to take cold frequently from slight causes,—if his lungs are easily irritated at all times, so as to produce coughing,—is of spare habit and ill-formed thorax,—and if many of his predecessors have died of phthisis, considerable apprehensions may be entertained for his safety; but care and good management may guide him past all danger.

If an individual have laboured under bronchitis, peripneumony, or pleurisy beyond the ordinary period, in spite of the usual means, tubercles may be suspected to exist already, or their formation is to be dreaded; and if any predisposition have been shewn, the result of the case will be still more doubtful. If he continue coughing, losing flesh, and looking pale, the pulse becoming more and more frequent, with increasing dyspnœa, and expectorating a copious mucus, almost colourless and semi-transparent, the chances are much against him; particularly, if the sound elicited by percussion is dull,—if the respiratory murmur is not heard at all, or only indistinctly, indeed the patient may be almost declared to have confirmed phthisis. If by and bye the skin become discoloured, with diminution of flesh,—if shooting pains are felt in the breast and back, between the clavicle and scapula,—if there is frequent cold shivering,—if the nails are turned in, the pulse still increasing, with viscid perspirations,—if the expectoration be cream-coloured, looking granular, adhering firmly to the vessel; or, if it should look bloody, or like milk-and-water, with a cheesy-looking matter floating on it; or, if the

expectoration has a fetid smell, a still worse opinion of the case will be formed. If, however, he is troubled with hœmoptysis now and then,—if the expectoration continue for some time,—if his hair look mangy, with increasing dyspnœa and weakness,—and if the sound in the upper part of the chest, instead of being dull as before, is observed to become clear,—if a gurgling noise is heard on applying the ear to the chest, or if, when the person speaks, the sound of the voice appears very clear through the stethoscope,—the person may, without any doubt, be pronounced to be affected with Pulmonary Consumption.

Sometimes the first and most important symptom throughout the affection, is hœmoptysis. I have seen some cases where diarrhœa came on with the cough,and continued throughout the rest of the patient's life; in general, however, it only exists for the last six weeks or two months. I rarely see a person live beyond twelve weeks, after the first appearance of the diarrhœa, which is accompanied by griping pains in the bowels. Sometimes the bowel-complaint alternates with violent perspirations, but occasionally they co-exist. Sometimes an individual has no pain from the beginning; at others, the pain is occasionally very acute, not only in the bowels, but in the thorax. Occasionally there is little cough, and little or no expectoration, the mildness of the symptoms causing great uncertainty in forming a diagnosis; and truth compels me to acknowledge, that auscultation and percussion cannot always remove the mystery which hangs over the case; but as soon as the tubercles soften, and become discharged through openings into the bronchial tubes, then the stethoscope will frequently be of use.

According to Louis, who has written the best treatise upon this subject which has yet appeared, hœmoptysis occurred in two-thirds of phthisical subjects, and on many occasions it took place before the expectoration and the cough. He has been led to conclude, that a profuse hœmoptysis renders the existence of tubercles in the lungs very probable. This symptom shewed itself more frequently in women than men, in the proportion of three to two.

It is always difficult to say, whether the pains in the chest

are owing to an affection of the muscles, or depend on the formation of tubercles in the lungs; but in the latter stages, there can be no doubt that they are frequently produced by pleuritic inflammation in the course of the formation of adhesions, which are almost constantly found when a cavern is situated near the surface of the lung.

Diarrhœa shewed itself in all Louis's cases, and when I come to state the appearances on dissection, it will be seen that this symptom is produced by irritation and ulceration of the bowels. Sometimes the appetite is not at all impaired, even when diarrhœa prevails; at other times the appetite is bad and fastidious, with frequent attacks of nausea, and sometimes vomiting. Occasionally there is pain in the right hypochondriac region. The tongue presents various appearances; sometimes in the first part of the disease, it is perfectly clean and moist; at others loaded, exceedingly rough and cracked, with considerable redness at the edges; and in the last stage, when there are extensive ulcerations in the bowels, it has the same appearance as that already described in dysentery, viz. as if skinned, perfectly raw, red and glazed. The lining membrane of the mouth and tongue, are sometimes covered with aphthous ulcerations, which aggravate the patient's sufferings very considerably, and which occasionally affect the epiglottis, pharynx, and œsophagus, producing great thirst, and difficulty in swallowing fluids as well as solids.

Appearances on Dissection.—Bayle divided phthisis nearly into as many species as there have been diseased appearances found in the lungs, but Laennec and Louis, on the other hand, think there is only one species of phthisis, the tubercular. The latter author states, that he has not examined the body of one subject, without finding as the principal lesion, tubercles or tubercular excavations, or the demi-transparent grey granulations; therefore, he joins Laennec in stating, that the existence of tubercles in the lungs is the cause, and constitutes the proper character of phthisis.

Before describing the various morbid appearances found in subjects who have died of phthisis, I shall seize the opportunity of stating some particulars respecting those accidental for-

mations which are called tubercular. They are tumours of a yellowish dull white colour, of variable consistence, which generally soften after a certain time, and when situated in the lungs, sometimes empty themselves by the bronchi, giving rise to excavations more or less extensive. They are always more numerous, larger, more advanced in their developement, towards the superior part of the lungs, than at the base. Out of one hundred and twenty-three dissections, Louis mentions having seen only two exceptions to this rule; for some years past, I have only seen one exception, and in it the superior lobe was quite healthy. According to Laennec, tuberculous matter may be developed in the lungs under two forms,—insulated bodies, and interstitial injection or infiltration. He divides the insulated bodies into four kinds,—miliary, crude, granular, and encysted; the second has three varieties,—the irregular, the grey, and the yellow. Under any of these forms, the matter presents a grey semi-transparent substance at first, which gradually becomes yellow, opaque, and dense; it afterwards softens, and gradually becomes converted into a fluid, like thick cream or pus, which being expelled through the bronchi, leaves cavities in the lungs, which were formerly termed ulcers.

Miliary Tubercles.—This kind of tubercle is the most common. The size varies from a millet to a hemp seed, very irregular in shape. At first they are distinct, and afterwards become grouped together, and very often run into one another, so as to form one mass. A small yellowish opaque point appears near the centre of each tubercle, which gradually enlarges, till it involves the whole mass; it cuts like cheese, and constitutes the crude tubercle. Sometimes the miliary tubercles do not coalesce, but continue to the last distinct, and sometimes acquire considerable size. Sometimes distinct masses are seen, which are frequently the product of many tubercles united together.

Granular Tubercles.—These were first described by Bayle, and were considered by him to be distinct from tubercles. But Laennec and Louis assert, that they are nothing more

than the ordinary tubercle in its first stage; the former distinctly states, that the only difference between these granulations, and the yellow tubercles, is that between green and ripe fruit; "besides (says he, at page 275,) the miliary granulations are never met with, except in lungs in which there exist at the same time other tubercles of a larger size, and sufficiently advanced to render their character no longer matter of question." My observations oblige me to dissent from this statement. Within the last six years, I have seen a considerable number of instances, in which the granular tubercles pervaded the whole of both lungs, being all nearly about the same size, and without any excavations, the surrounding pulmonary tissue being of a red colour, and of which several drawings, taken from different subjects, are in my portfolio. In these cases, there was little cough, and very slight expectoration; and in one adult, the lungs weighed nine pounds and three quarters. Three other cases occurred in children; in two of which, tubercles were also found on the arachnoid coat of the brain; and in one, the arachnoid and pia mater on one of the hemispheres, were ulcerated in a great many points. This kind of tubercular formation in the lungs has long engaged my attention, and I feel convinced they are the air-cells distended and enlarged by a diseased deposition, probably the consequence of inflammation of their inner membrane. The same appearance may be produced by pouring a little quicksilver into the air-passages of a rabbit, which is allowed to live for some days after the experiment. I have seen this appearance so frequently, that at one time, some years ago, I felt disposed to believe, that bronchitis was the cause of almost all tubercular formations in the lungs; which opinion appeared to be so far confirmed by a well known fact, that the majority of individuals who die of phthisis, attribute their illness to what they call a neglected cold.

Encysted Tubercles are rare. Sometimes I have seen one, two, or three encysted tubercles in the lungs, about the size of a filbert, enclosed in a cyst. Two of the subjects died of hooping-cough, and another of the disease called tabes mesenterica. In all these cases, the surrounding substance

seemed somewhat dense and redder in colour than usual, but in other respects, there was no disease in the substance of the lungs. Laennec says they are rare, and Louis declares he has only seen one instance of this formation. On making a section of the tuberculous mass, it appears of a whitish colour, semi-transparent, and of a texture like hard cheese; but for a more minute account, I must refer to the works of the above authors.

With respect to the *Tuberculous Infiltration*, I have merely to observe, that it is commonly of a greyish white colour, sometimes with a rose tint, and is either found surrounding tuberculous excavations, or existing in large masses, involving the whole lobe of a lung, having no connexion with the miliary tubercle; indeed, I have a preparation in which every part but the superior lobe is infiltrated with this matter, and I have an idea, that this may be one of the ultimate terminations of the granular tubercle. This opinion is somewhat supported by Laennec's description of the grey tuberculous infiltration.

According to Laennec, tubercles shew themselves in the first place, almost always in the top of the upper lobe, more particularly on the right side; while Louis states, that they are more frequently met with in the left lung. My own experience corroborates Laennec's statement.

An important question is still undecided, and perhaps will remain so, as to the cause of this singular formation; some insist, that tubercles are the product of inflammation of a peculiar kind; while others, with as much confidence, allege that they have nothing whatever to do with inflammation, except in as much as they sometimes excite it by mechanical irritation. Dr Baron has maintained that tubercles are primitively hydatids; but although he has supported his doctrines staunchly, and with much learning and ingenuity, yet I feel persuaded he has not convinced a single pathologist.

On viewing the body of a person who has fallen a victim to this very dreadful disease, it appears emaciated, sometimes to the last degree, and the chest looks contracted, which may, however, be a deception produced by the general emaciation. But Laennec thinks the contraction of the chest is real, and

is to be attributed to two causes. 1*st*, To the existence of pleurisies, to which phthisical patients are extremely liable. 2*dly*, To the attempts made by nature to cure phthisis. On opening the thorax, the heart is sometimes observed to be small; Laennec says, it is almost always remarkably so. The lungs are sometimes found adhering throughout their whole extent to the ribs, and the left lung is frequently attached to the pericardium, which is occasionally distended with serum. Sometimes one side of the thorax contains a purulent-looking matter, with a considerable quantity of air, the result of a vomica bursting into the cavity, leaving a communication open with the bronchial tubes; when this is discovered, the person is said to be affected with pneumo-thorax, which may be ascertained by the splashing noise which is heard, when the patient's body is shaken by the shoulders; the stethoscope also communicates a peculiar sound, called the *metallic tinkling*. The powers of the constitution, however, employed to prevent this accident are generally successful, by effusion of lymph, and the agglutination of parts. These adhesions are mostly found at the superior lobes, and sometimes are so dense, that it is impossible to separate them with the fingers, without tearing the lung itself.

On removing the lungs from the body, they are found to be much heavier than natural; one case I have already mentioned, in which they weighed nine pounds and three quarters. Notwithstanding the assertion of Laennec to the contrary, it has occurred to me several times to see the marks of the ribs left upon the posterior and lateral parts of the lungs, when they were very heavy; I have also seen it in two cases, where one lung was extremely dense and large, the effect of long standing chronic peripneumony.

On making a longitudinal section of the lungs, which will usually be found "to cry under the knife," we sometimes see only one excavation, which may be full, none of the contents having yet found their way into the bronchial tubes; and when solitary, it is almost always in the superior lobe. In general, however, many cavities are found, more or less filled with softened tuberculous matter, and the most striking difference will be observed in the progress of the tubercles in different situations, being most developed in the superior parts; occa-

sionally they present the appearance of fresh crops. Sometimes the lung is found studded with miliary tubercles, affecting also the pleura, not one of them being yet advanced into the crude state, and most commonly some of the bronchial glands will be found enlarged and hard, sometimes melanotic. I have met with this condition of the lungs only twice or thrice in children. It has been already mentioned, that I have seen several dissections in which the tubercles, called *granular*, by Bayle, were found in immense numbers, dispersed with great regularity throughout the whole substance of the lungs, with intervening spaces of a red colour, having the appearance of the roe of a salmon.

Occasionally we see a continuation of excavations throughout the whole lung, communicating with each other; surrounding tubercles having become successively softened, and discharged their contents in the one first formed. In these excavations bands are seen stretching in every direction, like the fleshy columns in the ventricles of the heart, which seem to be composed of condensed pulmonary tissue, coated over with tuberculous matter, or, as it has occasionally appeared to me, coagulable lymph; these sometimes contain blood-vessels. Bayle makes the same remark, which is questioned, however, by Laennec, who states that he has "never even found a vessel of *any consequence* included within the substance of these bands;" but I have seen it several times, and demonstrated it to my class. Indeed, on one occasion a large blood-vessel in one of these bands gave way, and the child quickly died. This is the case already noticed, when treating of vomiting of blood; the blood found its way from the cavern by a fistulous opening into the œsophagus, as high up in the neck as to correspond to the inferior margin of the thyroid gland, and from thence into the stomach. It will be remarked that Laennec's expression is qualified, and I am ready to grant, that it is rare to find vessels of "*any consequence*" in these bands, because they must be compressed and diminished in size, in proportion with the condensation of the pulmonary tissue in which they are involved. Laennec supposes, that the tubercles, during their increase, separate the blood-vessels, and press them to one side, which would no doubt

hold good, if there were only one mass; but it is not a satisfactory explanation of the situation of the blood-vessels, when the lungs are completely studded with tubercles. On one occasion, I found a blood-vessel passing through a cavern, in one of the bands already described, which had become obliterated by a plug of coagulable lymph.

The ramifications of the bronchi seem also to be obliterated; they are frequently found to open into a cavern, but I have never seen a trace of them in the tuberculous matter. As the tubercle becomes softened and discharged, the walls of the excavation are found to be more or less thickly covered with something like a membrane, which can be scraped off with the knife. According to Laennec, this membrane presents in different parts of its surface projecting points. Sometimes there is an appearance of two membranes, but occasionally the walls of the cavity are formed by the natural tissue of the lung itself, condensed, red, and charged with tuberculous matter. Sometimes the walls of the caverns appear to be lined by a membrane of fibro-cartilaginous consistence, occasionally filling up a small cavern entirely, presenting an appearance of cicatrization; in this way, it is supposed, that phthisis sometimes becomes cured.

The mucous membrane of the bronchial tubes, is generally red and thickened; that lining the trachea and larynx, is also occasionally red, thickened, and pulpy, with ulcerations here and there. Occasionally the epiglottis and larynx are also covered with numerous ulcerations, sometimes having the appearance of chancres.

The stomach occasionally presents diseased appearances, its mucous membrane being sometimes red, thickened, and velvety, with two or three dark streaks, as if seared with a red hot iron. In other cases, a great portion of the mucous membrane is found entirely removed, generally from the splenic extremity, leaving the naked vessels exposed, the rest of the membrane being thickened, soft, and reddish, with a great number of redder spots in the neighbourhood of the parts already destroyed, as if a pen full of red ink had been spattered over the surface. Sometimes large red vessels are seen arborescing in the mucous membrane, which displays ap-

pearances here and there, as if portions had been removed by passing the nails roughly over the surface of the stomach. In one case, all the coats of the stomach except the peritoneal, were destroyed over a space about the size of a shilling, but of an oval shape. In very few cases has it occurred to me to see tubercles in the mucous membrane of the stomach; they are frequently seen in that of the intestines, particularly in the caput cæcum, ascending colon, and termination of the ileum; they are sometimes situated in the mucous coat, and at others in the sub-mucous tissue. It is precisely in the situation above described that ulcerations are most frequently found, occasionally involving the whole of the colon down to the sigmoid flexure, which is much thickened in its texture, in some cases feeling contracted and hard like a small rope. The state of the mucous membrane has been already so often described in this work, that I have only one additional observation to make, which is, that I have never seen the ulcerations undergoing the healing process in the disease now under consideration; nor the mucous surface in that dark, livid, fleshy, and thickened state, which it frequently shews in dysentery. The peritoneum is sometimes found inflamed, thickened, and covered with flakes of lymph, which may be traced to points of the intestines, at which the ulcerations have extended through the other tissues, till it attacked the peritoneum itself; occasionally, indeed, a small perforation is found, which has admitted the passage of feculent matter into the cavity of the abdomen; in this case, the peritonitis will be found pretty general. The peritoneum is likewise the seat of tubercles in such cases. They first appear in the miliary form, and afterwards become crude.

The mesenteric glands are always found enlarged and altered in structure in phthisis, when the bowels are affected. The liver is sometimes found diseased, more frequently in women than in men; it is generally softened, enlarged, and of a whitish colour, feeling soapy to the touch; I have seen it so large, as to fill the iliac region, the right lobe extending down to the brim of the pelvis.

The brain is found in various states; sometimes there is effusion between the arachnoid and pia mater, or into the ven-

tricles, the effect in all probability of impeded circulation. Tubercles are also observed in various situations in the brain, and in different stages, either solitary in some part of the cerebral substance, or spread generally over the arachnoid membrane, where I have seen them frequently in the miliary form, as well as in a crude state.

It has never been satisfactorily explained, why ulcerations should so frequently be found in the mucous membrane of the bowels in phthisis. It may perhaps be partly attributed to the obstructed state of the circulation, producing considerable vascular distension in its vessels, which at last become inflamed and ulcerated. There may be also something in the diseased condition of the blood itself, which cannot be perfectly de-carbonized. I have little doubt that the mucous surface of the bowels, in the ordinary state of the system, assists the lungs in depriving the blood of carbon. After they have been impeded, by the tubercular state of the pulmonary substance, perhaps the mucous surface of the bowels performs increased duty, which terminates at last in inflammation and ulceration. For further particulars relating to the morbid appearances found in this disease, the reader is referred to the work of M. Louis.

Treatment.—Although Laennec states that phthisis is cureable, still such a happy event is scarcely to be expected when the disease is formed, and it is very possible he may have been mistaken. The only case which I conceive to be capable of a spontaneous cure, is that in which a solitary tubercle has existed, without any other disease of structure in the lungs. Much may, however, be done in warding off the disease for many years, by care in the management of the individual,—by attending to his diet, which should be nourishing and moderate,—to his clothing, which should be warm and light,—and to his exercise, which should never be carried the length of producing fatigue. Constipation should be avoided, and such an individual should remove to a steady climate if he can afford it. After the disease is somewhat advanced, a great deal of expense and trouble may be spared, by keeping the patient at home, because at this period change of climate will do no good; on the contrary, I have known it frequently to hasten

the fatal termination, from fatigue and accidental exposure to cold during the journey.

A great deal may also be done to retard the advancement of the disease, to mitigate the patient's sufferings, and to smoothe his passage into the vale of death, by avoiding every cause which can hurry the circulation and respiration, and preventing exposure in bad or changeable weather. Phthisical patients suffer occasionally very severely from pains in the chest, which may be frequently owing to pleuritic inflammation, which is almost always seen on dissection. Leeching and counter-irritation should therefore be occasionally employed. Profuse perspirations are to be discouraged, as are also the exhibition of acids, which are so often given to prevent them. The bowels are to be assiduously attended to, so as to prevent constipation, and the necessity of having recourse to strong purgatives, particularly when the disease is of long standing; when a laxative is necessary, it should be of the mildest description, and united perhaps with the extract of hyosciamus. Whenever a patient has more than the usual number of stools, particularly if they are watery, dark-coloured, and fetid, and when he begins to feel even slight uneasiness in the belly before going to stool, a few leeches should be applied to the abdomen, followed or not by the application of tartar-emetic ointment to produce irritation. It is wonderful, in many cases, to observe the good effects which follow the application of leeches in subduing the inflammation of the mucous membrane, thereby controlling the diarrhœa, and preventing the formation of ulcerations. Indeed, I have seen the best effects follow the application of leeches, even after a large extent of the mucous surface was ulcerated; but counter-irritation, produced sometimes by a mustard plaster, sometimes by hot spirits of turpentine, or by the antimony ointment, will be often found of essential service, when the patient is too weak to bear bleeding. It has already been shewn, that peritonitis is sometimes occasioned by the extension of the ulceration to the peritoneum; therefore leeches and counter-irritation are sometimes adviseable to subdue it. An occasional opiate is also serviceable; and I have seen the best effects produced by the exhibition of one-twelfth of a grain of strichnine, when the bowel complaint was very troublesome.

The duration of phthisis is very various: few survive above a year; indeed the generality of patients sink in about nine or ten months, and I have often observed that women die quicker than men. One case terminated fatally in about twenty days, where there was no other perceptible organic lesion, except the granular tubercles which affected every part of both lungs. Louis says he has seen a case fatal in twenty-four days, but that the general period in *acute phthisis*, is about fifty days.

It was formerly mentioned, that Bayle divided phthisis, into as many species, as there have been diseased appearances found in the lungs. He has therefore treated of calculous concretions, under this title; together with the condition which has been called melanotic; and that which has been so beautifully described by Laennec, under the term "medullary cancer." It appears to me that Bayle was so far right, because when the lungs are thus affected, the individuals frequently emaciate, cough, and breathe in the same manner as in the tubercular disease; but I have thought it best, for the student's advancement, to delay taking notice of these morbid appearances till I had fully treated of the tubercular disease, which I shall compile from Laennec's work.

1*st, Bodies of a Cartilaginous, Bony, Calculous, and Chalky Nature.*—Sometimes cartilaginous cysts are seen, containing bony or chalky concretions. Laennec states that the bony matter is not perfect, containing a greater quantity of calcareous phosphate, and much less gelatine than true bone, and hence these bodies resemble a piece of stone more than bone. In some cases, he says they contain no gelatine, and resemble moistened chalk. There are also found points of ossification in various parts of the lungs. I have never seen them provided with cysts, which Laennec states are very rare indeed; the non-encysted ossifications are those to which I wish to allude. They are sometimes very numerous; they feel rough and pointed, and are generally adherent to the pulmonary tissue, which is sometimes of a cartilaginous hardness. Lately I dissected a lung studded over with this kind of production; each was surrounded by a melanotic mass, which, when situated on the surface of the lung, adhered to the pleura, in such a man-

ner as to prevent a separation. Sometimes they are observed in the bronchial glands.

The chalky concretions are found in two states, one resembling soft chalk, the other like common mortar. In general, these are encysted. Sometimes calculous matter, of the shape and size of small peas, are not only found on the surface of the lungs, but are also occasionally expectorated, which leads many to suspect that they are formed in the bronchial tubes; it is more probable they are formed in the substance of the lungs, and find their way into the air-passages by ulceration or absorption. In meeting with these large bodies on dissection, I have always seen considerable disease in the surrounding pulmonary tissue, sometimes in the state of recent inflammation, at others of grey or red hardening. I cannot sanction the opinion, that these concretions are the product of powdery substances taken into the lungs, suspended in the air we breathe; but bronchitis is often produced in this manner. Laennec supports the same opinion, and his reasoning appears to be quite conclusive, (p. 380.) He also believes that these concretions are consequent to tuberculous affections that have been cured; but I see no reason for agreeing with this statement.

2*d, Melanosis of the Lungs.*—These productions, in their early or crude state, "possess a consistence equal to that of the lymphatic glands, and a homogeneous and somewhat humid composition; they are opaque, and in structure very much resemble the bronchial glands in the adult. When they begin to soften, a minute portion of fluid can be expressed from them, of a thin reddish character, intermixed with small blackish portions of a substance which is sometimes firm, sometimes friable, but which, even when friable, conveys to the touch an impression of flaccidity: in a more advanced stage, these portions first, and subsequently the whole mass in which they are contained, become quite friable, and are soon converted into a black paste. Melanotic matter is found in four different forms, encysted, non-encysted, generally infiltrated into the natural texture, and deposited on the surface of organs." (Page 383.)

Encysted Melanosis.—"The cysts enclosing this species are

very regularly rounded, and vary in size from that of a small hazle-nut to that of a walnut. They have a very regular and equal thickness, which is never greater than half a line. Cellular substance appears to be the only tissue that enters into their composition. They adhere by means of a very fine cellular membrane to the substance of the organ in which they are situated, and from which they can be readily separated by dissection. Their interior surface is rather smooth, but adheres to the morbid matter which it surrounds. The medium of this adhesion appears to be a very fine imperfect cellular tissue, though it cannot always be distinguished. I have hitherto (says he) only found this variety of melanosis in the liver and lungs; and in the latter organ I have only as yet met with a single mass of it." (Page 383.)

Un-encysted Melanosis.—" This variety is much less rare than the preceding. I have met with it (says he) in the lungs, the liver, the pituitary gland, and the nerves; but it has been since found in almost every organ. The volume of masses of this kind is quite indeterminate, varying from that of a millet seed to that of an egg, or more. They are also quite irregular in figure. They commonly adhere very closely to the parts in which they are situated; sometimes, however, they are united to these by a very fine, though sufficiently visible, cellular tissue, which permits their removal without any laceration. In this last case they are commonly of a rounded shape." (Page 384.)

Melanotic matter generally infiltrated into the natural texture.—" It frequently happens that this morbid matter, in place of being segregated in distinct masses, is disseminated throughout the organs in which it is found, and deposited between the particles or molecules of the natural tissue. The appearance and colour of parts affected in this manner, present a good many varieties, according to the texture of the organ, the quantity of matter deposited, and the particular condition of this matter. When the infiltration is recent, and in moderate quantity, the appearance of the affected part merely differs from the natural condition, in being intermixed with small black dots or striæ, the intermediate portions being quite of a healthy character. As the disease increases, the dots and

striæ enlarge in number and volume, until the whole of the natural tissue of the part is lost in the morbid degeneration. It is usually only at this period of its progress that the melanosed matter begins to soften; but if the softening takes place before the complete removal of the natural tissue of the part, it frequently happens that this softens also, and intermingles with the morbid matter, the colour of which is thereby changed to brownish, yellowish, or greyish." (Page 384.)

In my museum are various preparations which illustrate these very excellent descriptions of M. Laennec. There is one shewing this affection, which is confined to the mucous membrane of the stomach of a dram-drinker. I have also the portion of a lung, the whole of which was affected with the disease, and which looks like a sponge filled with very black ink. There is also a rare specimen of melanosis affecting the pleura pulmonalis.

A case, rapidly fatal, occurred to me in 1825. The subject was a middle-aged man, who began to complain on the 15th July, but did not take medical advice till the 19th, when he was found to complain of severe pain and weight in his head, some ringing in his ears, but no intolerance of light; the pain was increased by motion and coughing; his breathing somewhat accelerated, respiration 24 in a minute; but he had neither pain, cough, nor expectoration; complained of uneasiness in the abdomen, which was not increased on pressure; tongue whitish in the centre, and at the edges red; skin hot and dry; pulse 90, full and strong. Twenty ounces of blood were taken without any decided relief, and in five hours afterwards, twelve ounces more, which removed the head-ache. On the 20th, he was so much better as to be able to leave his bed, but became worse again towards evening. 21st, Again somewhat improved. By the stethoscope, the respiration was noisy and blowy, which led to a suspicion of the existence of crude tubercles, surrounded by healthy structure; respiration 30; pulse 112; tongue not improved; face somewhat flushed; skin hot and dry. He died next morning in what his friends called "a fit," which appeared to be asphyxia.

The lungs were found completely infiltrated with melanotic matter, but still crepitating; and they floated when placed in water; the spleen was also affected in the same manner.

3*d*, *Medullary Sarcoma.*—According to Laennec, "medullary sarcoma may exist under three different forms, viz. 1*st*, encysted; 2*d*, in irregular masses without a cyst; and 3*d*, diffused in the tissue of an organ. In whichever of these forms it exists, it presents, in its progress, three different and distinct stages, viz. 1*st*, the incipient or crude state; 2*d*, its perfect state, in which it exhibits the resemblance to brain, which forms its special characteristic; and 3*d*, its soft or dissolved state.

"I shall first describe it as it is observed in the second or perfect state, as this is the condition in which the three varieties most nearly resemble each other, there being much difference between them in the first and last stages. In its perfect state it is homogeneous, of a milky whiteness, and very like the substance of the brain. In different parts it has commonly a slight rose tint. It is opaque when examined in mass, but in thin slices it is in a slight degree semi-transparent. Its consistence is like that of the human brain; but it is commonly less coherent, being more easily broken and comminuted by the finger. According to its degrees of density, it resembles one part of the brain more than another; but it is more commonly like the medullary substance of a brain that is more than ordinarily soft, (or like that of a child's,) than the healthy brain. When existing in any considerable extent, this species of cancer is, in general, supplied by a great many blood-vessels, the trunks of which ramify on the exterior of the tumours, or between their lobes only, while the minuter branches penetrate their substance. The coats of these vessels are very fine, and readily ruptured; and this accident gives rise to clots of extravasated blood in the interior of the tumours, sometimes of considerable size, which bear occasionally a striking resemblance to those found in the brain of subjects dead of apoplexy. Extravasations of this kind may sometimes be so considerable as to supplant almost the whole of the brain-like matter, so that the true nature of the tumour can only be ascertained by some small points, still remaining, of the original growth. This change occurring in superficial tumours of this kind, and being productive of much hæmorrhage, appears to me to have given rise to the name of *Fungus Hæmatodes*, applied to certain cancers by modern surgeons. Under this name, however,

I am also convinced that they have confounded tumours of different kinds, especially those commonly called *varicose*, which are composed of an accidental tissue, very analogous to that of the *corpus cavernosum penis*. I have never observed any lymphatics in tumours of this sort, but it is probable that the circulating system is complete in them, as I have seen their substance deeply tinged with yellow in cases of icterus. The matter of encephaloid does not continue long in the state just described; it tends incessantly towards a softer condition, and, in a short space, its consistence scarcely equals that of a thickish paste. Then begins the last stage: the process of softening becomes more rapid, until the morbid matter becomes as liquid as thick pus, still, however, retaining its whitish or rosy white tint. Sometimes at this period, or a little earlier, the blood extravasated from the vessels contained in the tumour, becomes intermixed with the morbid matter, so as to give it a dark red colour, and the resemblance of clots of pure blood. In a short time the extravasated blood is decomposed; the fibrin concretes, and, together with the colouring matter, unites with the brain-like matter of the tumour; and the serum is absorbed. In this condition the morbid growth retains no resemblance to brain; it is of a reddish or blackish colour, and of a consistence like that of paste somewhat dry and friable. Sometimes the change of structure and appearance is so complete, that one would be led to consider the tumours as of a different kind, but for the existence in them of portions of the original matter still unchanged. In some cases, contemporaneously with tumours that have been changed in this manner, there will be found others retaining the original cerebral character; so that, in all cases, we are able, with a little practice, to discover the true nature of the tumour in all its stages." (Forbes's Translation, p. 393.)

" Such are the characters which this species of cancer presents in its two latter stages, and equally in all the three varieties. I shall now describe the characters of each of these varieties in the first or crude state."

" 1. *Encysted Medullary Sarcoma.*—The size of this species is very various. I have seen the tumours as small as a hazle nut, and larger than a middle-sized apple. I have found them

as large as this in the lungs. The cysts are of pretty equable thickness; and this is never more than half a line. They are of a greyish-white, silvery, or milky colour, and have a semi-transparency, more or less, according to their thickness. Their texture is altogether cartilaginous, and rarely fibrous; but it is much softer, and less easily broken by bending than cartilage; on this account they must be ranged among the *imperfect cartilages*. The medullary matter contained in these cysts, can be easily detached from their inner coat. It is commonly divided into several lobes, by a very fine cellular tissue, which may be compared with the pia mater, and the more so from the great number of blood-vessels which traverse it. The fineness and brittleness of these has been already noticed, and also their penetration of the cerebriform matter itself, to which they give a rose tint here and there. It is their rupture that gives rise to the clots of blood formerly mentioned. Sometimes, also, the trunks of these vessels are ruptured in the interstices of the lobules; and the blood being injected beneath the fine cellular substance which accompanies them, gives this the appearance of a distinct membrane. It is commonly in their early or crude stage that these tumours are divided into distinct lobes. These are especially observable on their surfaces, and have sometimes considerable resemblance to the convolutions of the brain. The cyst does not at all enter between these convolutions, nor does it even indicate on its surface their place or configuration. In this stage the medullary matter is pretty firm, often firmer than the fat of bacon. It is of a dull white, pearl grey, or even yellowish colour, and, in thin slices, has a slight degree of semi-transparency. When cut into, it appears subdivided interiorly into lobules, much smaller than those seen on its surface. These lobules are in such close contact as to leave no interval whatever; and their separation is merely indicated by the reddish lines traced by the vascular cellular tissue, by which the separation is effected. These lines rarely cross each other, but exhibit many irregular curves and convolutions. When these tumours pass into the second stage, their texture becomes more homogeneous, and all distinction of the small interior lobules is quite lost; the distinction, however, of the larger exterior lobes still continues.

The blood-vessels which run between these lobes, and in the cellular tissue immediately investing the tumour, are much more developed than in the early stages of the disease, and it is only at this second stage, or as it approaches the third, that the extravasations of blood take place. The third stage begins, as I have already mentioned, when the medullary matter has acquired a consistence like pap or paste, or like that of a brain softened by commencing putrefaction. In this state, it has still much resemblance to cerebral substance. I have never found that the morbid growth ever softens still more, or that it is absorbed or evacuated, so as to leave an empty cyst or cavity like tubercles; consequently it is not probable that we shall ever find pectoriloquism as a sign of this affection. Hitherto I have only found these encysted medullary tumours in the lungs, liver, and cellular substance of the mediastinum." (Page 395.)

" 2. *Unencysted Medullary Sarcoma.*—Medullary tumours of this species are very frequently met with. Their size is very variable. I have seen them from the size of the head of a full grown fœtus to that of a hemp seed. Their shape is commonly spheroid, but occasionally flattened, ovoid, or altogether irregular. Their external surface is lobulated, but the divisions are less regular than in the encysted species: their internal structure, in the two last stages, is precisely the same. The cellular membrane which invests them, is more or less marked, according as they are placed in a loose cellular tissue, or in the substance of a viscus of firm texture: in the latter case, their investing membrane is thinner and less distinct. In their first or crude stage, their semi-transparency is greater than afterwards; they are almost colourless, or have a very slight blueish tint in ocellated patches: they are pretty hard, and divided into numerous lobes. Their substance is then fatty, like lard; but when incised, it does not at all grease the scalpel, and it coagulates by heat, without shewing a particle of fat. The transition from the first to the second stage takes place in the following manner:—The substance of the tumour becomes more opaque, softer, whiter, and its inner distinction into lobules, for the most part, disappears. The original texture is observed longest in the neighbourhood of the external

interlobular fissures. In this situation, I have found portions still in a state of induration, after the mass of the tumours had passed into the third stage. I am led to conclude that the encysted tumour follows precisely the same progress as that just described. The non-encysted medullary tumours may exist in any part of the body; but they are most frequently met with in the loose and abundant cellular tissue of the limbs, and in the larger internal cavities. I have met with them in the cellular membrane of the fore-arm, thigh, neck, and mediastinum: they are still more frequently found in the cellular substance around the kidneys, and the anterior part of the spine, and in these situations they often have a very large size. Although they are frequently found in the viscera, they are, however, much rarer there than in the cellular substance." (Page 397.)

CHAP. VI.

ASTHMA.

This term was formerly used to express every species of difficulty of breathing, but was afterwards employed to signify a specific intermittent dyspnœa, independent of any organic lesion; but I shall shew how erroneous are such views of this disease, when I come to treat of its pathology.

This is a disease observed, most frequently, in people beyond the middle age, rarely in youth; affecting men oftener than women, and those of full habits more frequently than the spare; and it would seem to be occasionally hereditary.

Phenomena.—Attacks of asthma sometimes appear towards the afternoon, or at the moment the patient is going to bed, but more frequently they occur during the night; occasionally, indeed, the patient is seized during a sound sleep, and awakes with a sense of suffocation. In describing the symptoms, I shall confine myself only to a few of the leading ones, because depending upon so many morbid conditions of the lungs, heart, and perhaps the brain; the symptoms which may take place, have too wide a range of character to be taken into a short general sketch. Upon the approach of the paroxysm, the patient usually feels a sense of coldness over the surface of the body, indeed sometimes severe rigors take place; instantly a constricted feel is experienced in the chest, and difficulty of breathing, which is increased in the recum-

bent posture. He sits up, because he can then breathe more easily; he demands more air to be admitted into the apartment; he employs all his efforts to dilate the chest, and then to empty the lungs. There is restlessness; occasional cough, which the patient makes efforts to perform, thinking to force something out of the lungs which impedes his breathing. *Expiration* is performed with a peculiar whistling sound, and sometimes it is sonorous. The face is either pale or livid. The eyes have an anxious expression. The extremities are frequently cold, even the nose and the ears; and sometimes the face and breast are covered with a cold dew. The pulse is in various states,—sometimes full and quick,—sometimes small and quick,—sometimes oppressed;—and it occasionally intermits. The skin is frequently discoloured; and there is often a troublesome flatulency and sense of fullness in the abdomen. This is a short description of the symptoms as they generally occur. In slight cases, however, only a sense of constriction in the chest is complained of, which is sometimes relieved by the expectoration of a whitish mucus; but in more severe instances, they are much more violent and alarming, not only to the patient himself, but also to the by-standers, instant suffocation being threatened, and he solicits relief in the most pitiful manner.

An individual may have an attack for three or four successive nights, and not be again affected for months; sometimes it returns every month, for a number of years, and then disappears for a considerable time; women are generally attacked immediately preceding the catamenia. The duration of each paroxysm is very various, from two or three days to three or four hours. One attack leads to another, and the paroxysms generally become more and more frequent and severe.

In describing this disease, authors have mentioned two varieties,—the humid and the dry. The first commences more gradually, and becomes slowly worse; the cough is frequently severe, attended with early and copious expectoration, which produces relief; and the mucous râle is heard almost from the beginning. The dry asthma commences suddenly, and becomes quickly severe, but does not continue long. The

cough is slight; the expectoration very scanty, and observed only at the close of the paroxysm; the mucous râle is not heard till towards the conclusion of the paroxysm,—even then it is very slight, and perhaps partial.

Causes.—When once an individual has had an attack, it is well known that it is liable to return occasionally during the whole period of his life. The subsequent attacks, however, depend on different circumstances in different constitutions. Some are affected by external heat, others by external cold; many by overloading the stomach; and almost all asthmatics are affected by hurried exercise, and by any other cause which increases the rapidity of the circulation. It will generally be observed, that those who are predisposed to it, dread cold, moist weather, and stormy seasons. Individuals who follow particular occupations, would seem to be more subject to this affection than others, particularly those who are exposed to irritating vapours, and breathing an atmosphere in which different substances, in very fine powder, are suspended. Causes particularly affecting the nervous system, would also seem to be capable of producing paroxysms, such as passions of the mind, &c.

Pathology.—It is generally admitted, that that kind of dyspnœa which is now under consideration, and which is commonly known by the name of asthma, is produced by various diseased states of the lungs and heart. Chronic bronchitis, emphysema, and congestion, are the three conditions of the lungs which most frequently produce asthma; and I believe it is also occasioned by some kind of nervous irritation, the nature of which is yet unknown; and from this doctrine it would appear the spasmodic stricture of the bronchial tubes emerges.

Having already treated of chronic bronchitis, it is unnecessary to say more upon the subject in this place; I shall therefore proceed to describe emphysema of the lungs, of which there are two kinds, according to Laennec; 1*st*, That which consists in the simple dilatation of the air-cells, which he calls pulmonary or vesicular emphysema; and, 2*d*, That which is

characterised by infiltration of air between the lobules of the lungs, which he terms interlobular emphysema.

In the first, the size of the vesicles is much increased, and also less uniform; the greater number equal or exceed the size of a millet-seed, while some attain the magnitude of cherry-stones, or even French beans. The largest are, in all probability, produced by the union of several of the air-cells, in consequence of the rupture of the intermediate partitions; sometimes, however, they appear to arise from the simple enlargement of a single vesicle. The bronchial tubes, especially the small ramifications, are sometimes very evidently dilated in those portions of the lung where the emphysema exists.

The interlobular emphysema, according to the same author, is characterized by infiltration of air between the lobules of the lung, and must be considered as necessarily depending on a rupture of some of the air-cells in the first place, and the consequent extravasation of the air contained in them. When the extravasation exists near the root of the lungs, it sometimes extends to the mediastinum, from thence crosses to the neck, and occasionally spreads over the whole sub-cutaneous and intermuscular cellular substance of the body.

The pathognomonic signs of the pulmonary emphysema, says Laennec, "are furnished by a comparison of the indications derived from percussion and mediate auscultation. The respiratory sound is inaudible over the greater part of the chest, and is very feeble in the points where it is audible; at the same time, a very clear sound is produced by percussion. From time to time, also, we perceive, while exploring the respiration or cough, a slight sibilous rattle, or sound of the valve, as in the dry catarrh, occasioned by the displacement of the pearly sputa."

When existing in a high degree, it may be recognized by a sign which is altogether pathognomonic, which Laennec calls, the crepitous rattle with large bubbles. "In this case, the sound during inspiration or coughing, is like that which would be produced by blowing into half-dried cellular substance." (Page 158.)

In the inter-lobular emphysema, Laennec assures us "there is one sign completely pathognomonic, viz. the *dry* crepitous

rattle with large bubbles, when very distinct and continuous, or nearly so. Together with this sign, (continues he,) we usually perceive, during inspiration and expiration, a sound or sensation as of one or more bodies rising and falling, and rubbing against the ribs." (Page 171.)

Emphysema of the lungs is a common disease in horses, and is the great cause of what is called *broken-wind;* and is more common in man than is generally imagined. It is produced by various causes, as lifting a heavy weight; it occurs during the act of bearing down in labour; but more frequently it is a consequence of violent coughing in cases of bronchitic inflammation: indeed, I scarcely ever witness a dissection of an individual who has died of bronchitis or hooping-cough, without seeing pulmonary emphysema, as already stated when treating of these diseases.

For a more particular account of these morbid states, the reader is referred to the work of Laennec.

There cannot be a doubt but that the nervous system has a powerful influence on the functions of the lungs, when labouring under disease, as well as in health; and I imagine no one can deny that asthma may be produced either in consequence of some diseased action in the brain, or in the nerves themselves which supply the lungs. It has been attempted to be shewn, by Reisseissen and Laennec, that the bronchial tubes possess a muscular structure, through the agency of which the air-vessels contract, when under the influence of spasm; but neither is this a new idea on the part of Reisseissen nor Laennec, for Cullen makes the following statement: —"From the whole of the history of asthma now delivered, I think it will readily appear, that the proximate cause of this disease is a preter-natural, and in some measure, a spasmodic constriction of the muscular fibres of the bronchiæ, which not only prevents the dilatation of the bronchiæ necessary to a free and full inspiration, but gives also a rigidity which prevents a full and free expiration." (Par. 1384.) But neither is this an original idea of Cullen's, for it was entertained long before his time by Hoffman and Willis. It is foreign to the object of this work, to enter into anatomical controversy, and unnecessary in this instance, for even Laennec

states that he had "met with only a very small number of asthmatics, in whom there was evidence of pulmonary spasm, without any attendant catarrhal affection; but some few I have met with. On the other hand, I have known a great number of patients, in whom the catarrh, whether dry, pituitous, or mucous, was too slight in degree, or too small in extent, to be considered as the real cause of this asthma." (Page 412.) Because, perhaps, there might be in these cases some organic lesion of the heart and large vessels, or the coexistence of cerebral irritation. These observations lead me to remark, that there is almost always something more in this disease than the original organic lesion in the lungs themselves; this, experience has frequently led me to trace, to sudden congestion of the lungs, which flattens the air-vessels, and prevents them from dilating.

Various diseases of the heart also produce asthma; of these the most frequent are dilatations of its cavities, and diseases of its valves; as well as aneurism of the aorta, of which more hereafter.

Treatment.—From want of attention to the pathological condition of the body, the treatment of asthma has hitherto been uncertain and empirical. Some highly extol one remedy, and some another; some always use the lancet, and others condemn it in all cases. Although an advocate for occasional bleeding in asthma, yet I am convinced, that no remedy, except opium, has done more mischief, from having been used indiscriminately. There are only two circumstances in which bleeding is to be had recourse to; 1*st*, where we have evidence of acute action in any of the tissues of the lungs, superadded to any of the organic lesions already mentioned; 2*dly*, when there is much venous engorgement of the lungs. In old chronic cases, it must be a doubtful, and occasionally a dangerous remedy. Dr Bree assures us, that he repeatedly tried bleeding, but does not think the paroxysm was ever shortened an hour by the remedy; and in old people he found it injurious. It may be mentioned, that Dr Bree was himself an asthmatic, and after paying much practical attention to the disease, he wrote a Treatise upon the subject, which is

worthy of perusal. Bleeding, to be useful, must be employed early in the paroxysm, or not at all, unless the patient is threatened with suffocation. The pediluvium is to be instantly had recourse to, which I have seen sometimes of itself arrest a paroxysm; as well as inhaling the vapour of hot water. The apartment is to be freely ventilated, and too many people are not to remain in the room. Laxatives are always necessary. Vomiting is a favourite remedy with many, and is useful principally in two cases,—when there is evidence of a load of food being in the stomach,—and also when we know the disease to depend upon chronic bronchitis, when the act of vomiting will assist in clearing the air-passages of superabundant mucus. In almost all cases, counter-irritation is useful, whether produced by mustard plasters, stimulating embrocations, or blisters. Strong coffee was formerly recommended by Sir John Floyer, from the relief he experienced in his own person, and it has since been as highly lauded by his fellow-sufferer Dr Bree. With respect to opium, very opposite opinions have been maintained. Laennec speaks strongly of the whole class of narcotics, with a view of producing sleep, upon the theory of bringing patients so affected, as nearly as possible to the level of *bats*, and other animals which hybernate, and consume nearly a hundred times less air when in a state of torpidity. He also seems to have been influenced by an idea of producing relaxation of the muscular fibres of the air-tubes, thereby overcoming the spasm of the lungs. The following narcotics are mentioned by Laennec, as having been particularly approved of;—opium, belladonna, stramonium, phellandrium aquaticum, aconitum napellus, colchicum, tobacco, smoked or taken internally, cicuta, dulcamara, hyosciamus.

If the disease generally depended on spasm, opium would be useful in a great number of cases, but I am convinced, from what I have seen in practice, that it is the most dangerous of all the remedies which have hitherto been recommended. Dr Bree tells us, that four grains nearly sent him into the next world. In truth, it is a remedy which must very often interfere with the efforts of the constitution, for relieving the patient; more particularly in the form of the disease produced by

chronic bronchitis, when the opium, by allaying the cough, promotes the collection of mucus in the air-passages: hence the common observation, that opiates dry up the expectoration. I have seen some individuals very much relieved by smoking tobacco, and some from smoking stramonium.

As the disease has been so frequently observed to terminate by expectoration, the class of medicines called expectorants have been much employed. In fact, if many routine practitioners are asked what should be done for a patient in a fit of asthma, they will be found either to order bleeding, or to give an expectorant. I have seen them often tried, but very seldom with any good effect. Of this class, squills is most in use, together with the fœtid gums.

After the paroxysm is over, tonics are frequently prescribed; with this view, it would appear, acids are recommended. Dr Bree speaks much in praise of a remedy composed of nitric acid, hyosciamus, and squills. Some tell us to avoid warm bathing, and to use the cold bath as a tonic during the intervals; the truth is, that the one agrees with some better than others, and I have seen the cold do as much mischief as the hot bath.

Issues, setons, and cauteries, have all been used as counter-irritants, and it is worthy of remark, that many fits of asthma have taken place, immediately after the disappearance of a cutaneous eruption. I have myself witnessed examples of this kind, and I have been acquainted with some asthmatics who were also affected with cutaneous eruptions, and who, although they complained of much distress, from the itching and tingling of the skin, were yet contented with their lot, and invariably expressed themselves as being certain of an attack of asthma if they were repelled. The observation of such circumstances, has led me to insist much on the propriety of employing counter-irritation in all diseases of the chest, but particularly those of a chronic nature.

The sub-carbonate of iron has also been recommended, but I cannot speak from experience of its effects.

Galvanism is another remedy which has been much lauded, not only in this country, but on the continent. Dr Wilson Philip, to whose exertions in endeavouring to improve the

science of medicine, the profession stands deeply indebted, directed his attention to this subject. He made many experiments on animals, in conducting an enquiry into the laws of the vital functions; and among others, he divided the pneumo-gastric nerves, in order to diminish the nervous influence in the lungs and stomach; the digestive powers were found to be thereby much impaired or suspended, and dyspnœa was produced. He then directed galvanic influence towards the lungs and stomach, and he observed that the animal could be made to breathe easily, and digest its food. After these experiments had been repeated and confirmed, Dr Wilson Philip was naturally led to inquire what diseases depended on a failure of the nervous influence. Judging from analogy and observation, he thought it probable that indigestion and asthma were two, at least, of the number. This is a short view of the circumstances which led Dr Wilson Philip to expect relief from galvanism in *habitual asthma*; which name he has given to that form of the disease, in which the breathing is constantly oppressed,—better and worse at different times, but never free,—and often continues to get worse in spite of every means we can employ. He states, that he has used it in many cases, and almost uniformly with relief, applying as much galvanic influence as patients could bear without complaint. The period has varied from five to fifteen minutes, before ease was experienced; and he found generally, that the stronger the sensation excited, the more speedy the relief; he also found from eight to fifteen four-inch plates of zinc and copper sufficient; the fluid used, was one part of muriatic acid to one hundred and twenty of water. Some people required more than sixteen plates, and a few could not bear eight. It is curious and interesting, that on the first application of galvanism, a person may experience little sensation from the operation of twenty-five or thirty plates, yet afterwards he may not be able to bear more than six or eight. He applied it in the following manner;—he placed two thin plates of metal dipped in water, one on the nape of the neck, the other on the lower part of the epigastric region. The wires from the different ends of the trough were brought in contact with the plates; in this way, the galvanic influence was sent through the lungs, as much as

possible in the direction of the nerves. The operation was discontinued as soon as the patient said his breathing was easy, any further application being found quite unnecessary. We are assured, that this means afforded relief to those who had laboured under oppressed breathing for ten or twenty years, as readily as in more recent cases; therefore, we must join Dr Wilson Philip in taking this as a proof, that no organic lesion existed in the lungs. For further information on this interesting topic, the reader is referred to his work, entitled "Inquiry into the Laws of the Vital Functions."

Whatever differences of opinion exist respecting the nature and seat of asthma, and the treatment proper to be pursued during a paroxysm, all agree in recommending, that the diet of an asthmatic should be light, nourishing, and easy of digestion; that his clothing should be warm; and that he should avoid exposure in cold damp weather, particularly when the wind is in the East; and that his bowels should be kept easy, avoiding both extremes: I have known a paroxysm brought on by hypercatharsis as well as constipation.

PART IV.

DISEASES OF THE CIRCULATING SYSTEM.

CHAP. I.

GENERAL REMARKS.

Diseases of the heart, from their frequency, and the extreme severity of their symptoms, constitute a very important branch of Practical Medicine. Till the conclusion of the last century, the generality of the profession were very imperfectly acquainted with them, and even now, when so much has been done by the labours of Corvisart, Laennec, Bertin, and others, very erroneous notions prevail both with regard to their diagnosis and treatment. On this subject, our common systematic works are particularly deficient, and with the exception of the very imperfect Treatise of Mr Burns, no original work exists in English, on this interesting and important class of diseases; but it behoves me to mention, that the "original cases" of Dr Forbes are particularly deserving of attentive perusal; and many valuable papers and cases are also scattered through our periodical works, and the transactions of the different societies.

The merit of the discovery of Mediate Auscultation by Laennec, has been already as fully discussed as the plan of this work would allow. It only occurs to me to mention, in this place, that very great advantage is also to be derived from the employment of the stethoscope in diseases of the heart. Percussion also affords us some assistance, but much less than in some affections of the lungs. True it is, that some physicians inform us, that the stethoscope is entirely useless in affections

of the heart, because, according to their account, we cannot distinguish between organic disease, and nervous palpitation, which we confess we cannot do in all cases by the stethoscope alone. These gentlemen seem to forget, however, the impossibility of forming an accurate diagnosis by the common signs or symptoms; and I may observe, that they might as well be required to give up the exercise of their profession altogether, as reject the important assistance which we derive by mediate auscultation, because it does not in all cases afford an absolute certainty.

A common prejudice also prevails, that as diseases of the heart are in their nature irremediable, therefore, an accurate diagnosis would only lead to despondency and inertness of practice. Stethoscopists deny both the statement, and the rash conclusion drawn from it. We insist, that the more accurately we are acquainted with the nature and seat of a disease, the more appropriate will be our practice; and I can state from experience, that much may be done by judicious treatment, not only to alleviate, but in some cases to cure, diseases of the heart. We can with truth state, that we have witnessed most lamentable effects in practice, from such opinions being acted upon; we have seen patients labouring under disease of the heart, pronounced to be far advanced in consumption; and others, with disease of the valves, treated for indigestion, and gastric irritation; and we have seen patients labouring under enormous dilatation of the heart, in its last stage, who were laughed at, and treated for nervous or dyspeptic complaints, and recommended to avoid vegetables, and eat beef-steaks; who were forced to use exercise, when the very effort brought on severe dyspnœa, and feeling of suffocation, and even then, the symptomatical physicians have persisted in their course. I shall content myself at present, by stating one additional circumstance,—that it is of the greatest consequence to be able to distinguish simple hypertrophy from dilatation of the heart, because I feel convinced, it is as capable of being cured, as almost any other disease to which the animal frame is liable; so that, if there were even no other circumstances to uphold us, in making use of the stethoscope, as an additional means of diagnosis in dis-

eases of the heart, this alone would induce every man in the profession, of common feeling, and possessing common honesty, earnestly to set about acquiring the power of employing the instrument. I blush to confess, that I was formerly one of those who ridiculed mediate auscultation, merely because, on applying the stethoscope once or twice, I could hear nothing at all; but after putting myself into the hands of Dr Scott, I was able, in the course of a very short time, to discriminate between the sound produced by respiration in a healthy state of the lungs, and that in disease, although I could not yet tell to what the difference was owing.

The contractions of the heart, give rise to very distinct sounds, which enable us with the utmost certainty, to study with ultimate success the actions of that organ, and to detect any irregularity or deviation from its natural condition. Before describing the organic changes, it is necessary to give a very brief analysis of the natural action of the heart, as heard and felt with the stethoscope. If we apply the stethoscope to the region of the heart, and place a finger on the radial artery, at the moment of the arterial pulse the ear is sensible of a slight impulse, accompanied by a somewhat dull, but very distinct sound. This is the contraction of the ventricles. Immediately after, and without any interval, a clear sound is perceived, resembling a valve, or whip, or the lapping of a dog, which announces the action of the auricles. After this, there is a well-marked period of repose, succeeded by the motion and dull sound already described as proceeding from the contraction of the ventricles.

In a healthy person, with a well-proportioned heart, and carrying a moderate quantity of flesh, the shock or impulse of the heart, can only be felt over, or very near the cardiac region. In persons who are very thin, or in disease, the impulse is more extended, and may be felt over the whole of the sternum, and left side of the thorax.

The sound can generally be heard over the left side, anteriorly, and under the clavicles, but more faintly as we recede progressively from the cardiac region. When more extended, it is heard successively in the following places;—1. Left side anteriorly,—2. Right side anteriorly,—3. Left side posteriorly,—4. Right side posteriorly.

The intensity of sound is progressively less in the order above-mentioned, but it must always be recollected, that a condensed, or strongly compressed lung, transmits the sound better than a healthy one; so that in estimating the heart's action, we must always take into account the state of the lungs.

When the heart can be heard in all the points stated, we may be certain that it is larger than natural, and that it is dilated; for it may be stated generally, that a great extent of sound is a mark of thin parietes, more particularly of the ventricles; and that a strong impulse, with a confined range of sound, coincides with hypertrophy, or increased thickness in the walls of the ventricles.

By the shock or impulse, we mean the sensation of percussion which is communicated to the ear on applying it immediately to the chest, over the region of the heart, or through the medium of the cylinder of wood. The degree of impulse is inversely as the extent of the sound, and directly as the thickness of the walls of the heart: when these walls are very thick, the shock is often so great as to elevate the ear of the observer, and may be often perceived even through the garments; and the greater the degree, the longer the impulse is perceptible.

When the walls are *very* thin, no impulse is communicated, even when the sound is very loud. A strong impulse, then, is to be considered as a characteristic of simple hypertrophy; —the absence of impulse, with increase of sound, as an indication of dilatation;—sound and impulse conjoined, points out the combination of hypertrophy with dilatation.

It is necessary to mention, that the sound and impulse of the left ventricle is perceived on the left side of the chest, in the space between the cartilages of the fourth and seventh ribs;—that of the right ventricle, over the lower part of the sternum.

Certain remarkable sounds, which also accompany the contraction of the heart and arteries, require a few observations in this place.

The blowing or bellows sound, as it is called by Laennec, from its resemblance to the sound produced by that instrument when blowing the fire, requires a little explanation. It

accompanies the diastole of the heart, and when present, in the greatest degree, entirely masks the natural sounds of the auricle and ventricle. It is also sometimes heard in the subclavian and carotid arteries.

The sound of the saw or file is another phenomenon occasionally presented by the action of the heart. Both this and the blowing sound were formerly considered as indicating disease of the valves of the heart ; and although almost always present under such circumstances, yet they are by no means to be considered as altogether pathognomonic, as they may exist in a slight degree, without any organic lesion. Laennec states, that the only disorder which appeared to him constantly, or almost so, to accompany the bellows and file sound, was a state of nervous agitation, which, however, was more or less marked by other symptoms. It is not unfrequently met with in young persons affected with hypochondriasis, and, in almost all cases, we can make ourselves pretty certain that it is merely owing to a nervous affection; for, if we examine such patients in a state of repose, no particular sound can be heard ; but, after violent exercise, or during a state of agitation, it becomes instantly perceptible ; whereas, if it proceeds from disease, it will never be entirely absent, although it may be increased by every cause which tends to hurry the circulation, and may be heard at all times, in severe cases, even on the back.

It appears probable to me, that even in the pure nervous affections, these sounds, resembling those produced by diseases of the valves, may be hereafter found to depend upon a congenital disproportion between the heart and the orifices through which the blood passes, and which only produces the effect when the circulation is hurried.

Dr Scott, to whom I am indebted not only for the little knowledge I possess in the use of the stethoscope, but for much valuable assistance in writing this part of the work, informs me, that he has observed a very peculiar sound during the action of the heart in nervous persons ;—it is a slight click or jingle, sometimes resembling the splashing of water in a metallic vessel. The first time he met with this sound,

was in a very young woman, in a state of insensibility, where the sound gave the distinct idea of a fluid in the pericardium, agitated by the heart. I have also noticed this remarkable phenomenon; but am more inclined to attribute it to the motion of small quantities of fluid and flatus moving from one part of the stomach or bowels to another. Although I am an older man, yet it were much to be wished, that all pupils had as much reason to respect the talents and acquirements of their instructors, as I have those of Dr Scott; and it is therefore with much diffidence that I express an opinion on the subject of auscultation differing from his.

A similar error was committed by Laennec, who, for some time, considered a sound resembling the cracking of leather, as pathognomonic of pericarditis.

The purring or whizzing vibration,—the cat pur, may also be briefly mentioned. It is a peculiar sensation communicated to the hand placed on the cardiac region, and which Corvisart considered as a sign of ossification of the valves, more particularly the mitral. It is almost always confined to the left side of the chest, and though it is no doubt met with in almost every case of considerable contraction of the valves, yet it is sometimes perceived when no organic lesion exists.

Before describing the different diseases of the heart, a brief enumeration may be given of the general symptoms which accompany almost all these affections. In the early stages, it is of the utmost consequence to form an accurate diagnosis; but the general symptoms are very nearly similar in all.—These are habitually short and difficult respiration; palpitation, and a feeling of oppression about the heart on any sudden or violent exertion, as in running or walking up an ascent. The late Dr Monro was so well aware of this, that before examining a patient suspected to labour under disease of the heart, he was in the habit of desiring him to ascend a flight of stairs as quickly as he could. Emotions of the mind, also, almost constantly induce paroxysms of panting and dyspnœa, or fits resembling those of asthma. Sleep is frequently disturbed by sudden startings and uneasy dreams; there is a peculiar cast of countenance, with a marked degree of irritability of temper; frequently determinations of blood to the

head take place; and very generally a disordered state of the digestive functions is observed, indicated by impaired appetite, flatulent distension, irregularity of the bowels, &c. which invariably aggravate the feeling of uneasiness about the heart. Sometimes the patient suffers most violent paroxysms of pain, and all the other symptoms which will be described under the title Angina Pectoris.

In the latter stage, the disease can in general be recognized at a single glance; the patient is unable to lie down, he therefore requires to be propped up in the chair or bed; the face is puffed; the lips swollen, which display the different shades of colour produced by impeded circulation through the lungs; the legs and scrotum become ædematous, and dropsical effusions take place into the cavities of the thorax and abdomen, and also in the pericardium. Hæmorrhage from the lungs is also not very uncommon; and the scene sometimes terminates in apoplexy; indeed, diseases of the heart frequently terminate in sudden death. The pulse varies very much, according to the particular disorganization; in hypertrophy, for example, it is hard, full, and bounding;—in valvular disease, small, and easily rendered intermitting by exertion, and by mental emotions. Most of these symptoms are, however, common to other diseases; and those of the earlier stages may depend on disorder of the digestive organs, or may accompany what are usually termed nervous affections. It is of extreme consequence that they should be distinguished, if it were only to save the reputation of the medical attendant, as patients so affected generally die suddenly, perhaps at a time when the physician has given a favourable opinion, or perhaps slighted the complaints of the patient altogether. With the assistance of the stethoscope and percussion, combined with an accurate study of the individual characters of the case, and the constitution of the patient, we shall be able to form a more correct diagnosis, than those who trust solely to the ordinary means of investigation.

In making our examinations with the stethoscope, we should always be particularly careful that the patient is free from agitation, and has been in a state of perfect quietude for some time previous.

The causes of diseases of the heart are very imperfectly known;—all affections of the lungs, which give rise to long-continued and severe dyspnœa, are, no doubt, the most frequent;—they are considered by Laennec as the best ascertained; and we also know, perhaps with more certainty, that diseases of the heart give rise to various affections of the lungs, more particularly hœmoptysis and pulmonary apoplexy.

A disproportion between the diameter of the aorta and size of the heart, was considered, by Corvisart, as a constant cause of dilatation; and it is more probable that a congenital disproportion is a frequent source of hypertrophy.

Affections of the mind have been considered as the most usual causes of diseases of the heart; thus, we are told, that during the French Revolution, these affections became much more common than at any previous period. The influence of depressing and exciting passions, in predisposing to disorders of this kind, can scarcely be questioned; but it must be borne in mind, that about the period above alluded to, greater attention began to be directed to this branch of pathology, and in point of fact, these diseases became better understood, and were more certainly recognized. Every cause which upsets the balance of the circulation, producing an overload of blood about the heart and lungs, also excites this class of affections; hence I have been able to trace it to long-continued intermittent fevers. It would appear that rheumatism is a frequent cause of enlargement of the heart: it is well known by practical men, that pericarditis sometimes comes on during an attack of acute rheumatism; and we also find that those who have suffered repeatedly from that painful affection, not unfrequently fall victims to enlargement, or other diseases of the heart. In what relation these diseases stand to each other, cannot at present be discussed. Gastric irritation is a very frequent source of increased and disordered action of the heart, and there can be no doubt that it often lays the foundation of structural disease in that organ.

In conclusion, it may be confidently stated, that no subject connected with the exercise of the medical profession, deserves more attentive investigation, or presents more views of practical interest and importance.

CHAP. II.

PALPITATION, AND ANGINA PECTORIS.

PALPITATION.

By this term, I mean an unusual pulsation of the heart, without any organic lesion; the palpitations produced by disease of the heart itself, are to be considered afterwards. This is to be regarded as a purely nervous affection, occasioned by excessive indulgence in various passions, by mental emotions, and very frequently, by a disordered state of the stomach and bowels. Palpitation is more readily excited in persons of a nervous and sanguine temperament; when first observed, the affection is slight and transient, but by frequent repetition, the organ at last becomes so irritable, that the least circumstance reproduces it. Stimulants of all kinds, violent exercise, excessive depletion, also occasionally produce it.

Nervous palpitations are frequently most distressing, when the body is in a perfect state of repose, during the first part of the night, and often prevent sleep for many hours. The action of the heart is not only accelerated, but increased in the impulse and sound; sometimes tumultuous, occasionally so strong, that the person affected feels it painfully. There is sometimes a sensation of internal agitation, particularly in the head and abdomen, and, as in hysteria, the urine is copious and limpid.

Nervous palpitations are not to be neglected, as by frequent repetition, they may lead to disease of structure, either in the heart itself, or in some other organ. Laennec says, that he

has never seen any proof of the accuracy of this opinion, but I think I have.

According to Laennec, in nervous palpitation, the first impression conveyed by the stethoscope is, that the heart is not enlarged. The sound, though clear, is not heard loudly over a great extent of chest, but this very much depends upon the quantity of flesh the patient carries. In thin people, I constantly hear the sound during palpitation, in every spot on the anterior part of the chest; and when the heart is acting very violently, I have also perceived it in the back. With respect to the impulse, Laennec states, that in the nervous affection, the head of the observer is never sensibly elevated, which, he says, is the most important and certain of any sign, when taken in conjunction with the frequency of the pulsations, which are always quicker than natural, most frequently from 84 to 96 in the minute. I have seen, and felt the impulse of the heart in palpitation, so as not only to elevate the head of the observer, but to affect the bed-clothes. Dr Ferrier, one of the most accurate observers, in detailing a case of violent palpitation of the heart, states, (p. 205. vol. 1st) "Every stroke of the pulsation raised her clothes, so as to be visible at some distance;" under the use of castor, with attention to her clothing and diet, she recovered "in the course of a few weeks." In this affection, there are rarely any signs of determination of blood to the head or chest.

It is rare that palpitations produced by functional derangement of the heart continue for any time; they are in general transient, and are perhaps less troublesome when the patient is taking exercise in the open air, than at other times; when they are of long continuance, and without intermission, they will for the most part be found to depend on some organic lesion.

Treatment.—I have never yet been obliged either to open a vein, or apply leeches; but I can readily imagine a combination of circumstances, which might render the one practice or the other adviseable; for instance, in a young plethoric individual, who is affected at the same time with some febrile movement. Some French practitioners recommend the ap-

plication of leeches to the anus. Laxatives, cold or warm bathing, moderate exercise in the open air, light nourishing diet, and avoiding the exciting cause, will usually be found successful. When the affection, however, resists these remedies,various antispasmodics have been recommended, as opium, ether, musk, castor, and valerian; of all these, perhaps the best is the volatile tincture of valerian.

ANGINA PECTORIS.

This dreadful disease generally makes its attack in the following manner, and is marked by the following symptoms. It is commonly first felt when an individual is walking up-hill, when he is suddenly and unexpectedly seized with an agonizing sensation in his breast, a little to the left of the sternum; he also experiences a sense of constriction and suffocation, which obliges him to stop, but which, after a little rest, disappears, and he flatters himself that it is nothing more than a common stitch in the side, from walking too quickly. I have known a person fall down in a state of temporary asphyxia, even on the first attack; those affected in this manner, fancy that they have merely fainted from excessive pain. Several such attacks may take place in the course of a few years, or even a few months, the paroxysms continuing only for a few minutes, and the person thinks nothing of them. In the course of time, however, they are remarked to return more frequently; the pain becomes more and more excruciating, and the paroxysms continue longer. Formerly, exercise only brought them on, but now every little excitement, or exertion of mind or body, or eating an indigestible article of food, produces an attack; at last, the paroxysm comes on without any assignable cause, even when in bed, and during sleep.

At the first onset of the disease, the pain is usually confined to the breast, in the region of the heart; then it extends towards the shoulders, and frequently affects the superior extremities down to the wrists. At this moment, I have a gentleman under my care, who complains of the pain extending from the breast to the arms, stopping exactly at the insertion of the deltoid muscle on each side. In severe cases, the patient is pale, perhaps quite ghastly,—his features

being contracted,—his eyes hollow,—his countenance expressive of the most dreadful suffering;—his body perhaps cold, and covered with a cold, clammy sweat;—his respiration is quick, but free; that is to say, the patient can, if you desire him, occasionally take in a deep inspiration. In such cases, the pulse is in general slow, and so contracted and weak as scarcely to be perceptible; but this varies very much, for in other instances, particularly when the skin is warm, and the face flushed, the pulse is quick, strong, and irregular: I have seen cases in which it was perfectly natural in strength and number of pulsations.

In slight cases, the whole paroxysm is sometimes over in half an hour; in others, in an hour; and it often ceases with a discharge of flatus from the stomach and bowels. Sometimes it ceases suddenly, leaving no sense of uneasiness behind; at others, considerable soreness remains in the chest for several hours or days.

In the most dreadful cases, the patient never feels entirely free from uneasiness and constriction in the chest, and he dreads making any unusual exertion.

In the year 1826, I was requested, by one of my pupils, to see a gentleman who had had several attacks of this disease, and was then labouring under one of the most severe paroxysms I have ever witnessed, which had continued for several days before I saw him. It was most afflicting to see a strong and a brave man weeping like a child, and imploring relief in the most impassioned strain.

Angina pectoris rarely attacks people under forty; gouty subjects, and those who are corpulent, seem, upon the whole, to be more liable to it than others. It appears to attack men more than women; and I believe that sedentary habits create a predisposition to it, as well as long-continued and very violent bodily exertion.

Appearances on Dissection, and Pathological Remarks.—This disease has attracted considerable attention on the part of pathologists to ascertain its nature and seat, since it was first noticed by Dr Heberden in 1768, in a paper contained in the

2d vol. of the "Transactions of the College of Physicians" of London.

The great error which subsequent writers have committed, is, attributing angina pectoris to one particular disorganization;—thus, one has attributed it to ossification of the cartilaginous extremities of the ribs;—a second, to ossification of the valves of the heart;—a third, to fat accumulated about the heart;—a fourth, to dilatation and hypertrophy of the heart. Dr Parry supposed that it depended on ossification of the coronary arteries;—Dr Haygarth, on inflammation of the mediastinum;—Dr Hooper, on diseases of the pericardium;—and there are many who think it is produced by asthma, who, upon the confined principles adopted by symptomatical pathologists, convert a symptom into a disease, and who are constantly seen to confound cause and effect. Dr Hosack, an American physician, is of opinion that it most frequently arises from general plethora, more particularly "from a disproportionate accumulation of blood in the heart and large vessels." I have to state, that I have seen all these morbid appearances on dissection, in subjects who were never affected with angina pectoris; and it has been alleged, and I believe truly, that patients have died suddenly from this affection, in whose bodies not the slightest trace of disease of any kind was perceptible, which has led some to assert that it depends upon scrofula, syphilis, a nervous temperament, or a peculiar affection of the *par vagum*. Dr Parry's opinion, however, seems still to have great weight with some in the profession; but it may be mentioned, that I have seen two cases in which the coronary arteries were extensively ossified, and a third, in which they were completely so, and yet none of the patients had symptoms of this disease. A remarkable case of the same kind, which happened many years ago, is detailed in the 1st vol. of the "Medical Communications," by Mr Watson. In justice, however, to the memory of Dr Parry, it ought to be stated, that he did not attribute the disease entirely to the effects of ossification of the coronary arteries, for he distinctly states, that the symptoms shew that an accumulation of blood about the heart and large vessels takes place. This statement goes so far to confirm the opi-

nion of Dr Hosack, which Dr Forbes assures us, is more in accordance with his own observation than any of the other opinions; but he adds, (at page 692. of his Translation,) that "in persons subject to this complaint, in whom no severe organic disease of the heart existed, I have generally found, by auscultation, that the organ was possessed of thin parietes and feeble powers." In my work on "Puerperal Fever," which was published in the year 1822, a case of angina pectoris is recorded, (at page 83.) which was evidently produced by a congested state of the heart and large vessels near it. The life of the individual appears to have been saved by timely blood-letting; upwards of six years have now elapsed, and there has been no tendency to a return of the disease, which may be attributed to attention to the bowels, and a proper regimen.

Treatment.—It being ascertained that the symptoms of Angina Pectoris occasionally accompany such a variety of organic lesions, and also take place from what, to all appearance, may be considered as a neuralgic affection, it is scarcely to be wondered at, that so many remedies have been recommended, and so few found serviceable. It is highly necessary, therefore, to find out whether or not there is any organic affection.

If there are marks of general plethora, with or without an organic affection of the heart, blood is to be taken from a vein, if the patient's strength will admit of it, particularly if there are any signs of an accumulation of blood either in the heart or lungs; at the same time, we are to attend to restore the heat of the body, if it be below the natural standard. I have so frequently seen a neglected state of the stomach and bowels precede an attack of angina pectoris, that I consider it of the greatest importance to clear out the primæ viæ as speedily as possible. Should the attack come on soon after a meal, an emetic is to be prescribed; if not, purgatives are to be had recourse to, and repeated at short intervals. I have also seen leeches serviceable, as well as the application of a large mustard plaster over the præcordial region. Long-continued counter-irritation on the chest, with tartar-emetic ointment,

is to be persevered in for a considerable time, and repeated at intervals, upon the least unpleasant sensation in the chest being complained of.

It is a great matter to be able to say, whether there is any structural disease of the heart, or not; and although the stethoscope is not so useful in diseases of the heart as of the lungs, yet, in a majority of cases, taken along with other symptoms, we shall be able to determine this point. If there is no disease of the heart, very large opiates will be found singularly beneficial; and if the bowels are in a very bad state, a pill may be exhibited every second or third hour, composed of five grains of calomel, the same quantity of opium, and three or four drops of oil of croton. I am aware, that many object to the use of opium in such cases, but, I suspect, without sufficient grounds. It would appear that the celebrated John Hunter used opium, but it is alleged, with an aggravation of the disease; the doses he used, however, were quite inadequate in such a severe disease. I have not had an opportunity of using colchicum in this disease; but, from its effects in rheumatism and gout, I am inclined to believe that it will be found very beneficial. It is stated by Sir Everard Home, that John Hunter was advised to take wine, which he did accordingly, but found the paroxysms more readily brought on after it. Laennec speaks highly of magnetism in such cases, and although too much cried up at one time by medical men, he thinks is too much neglected at present. He used it in the following manner:—"I apply (says he) two strongly magnetized steel plates, of a line in thickness, of an oval shape, and bent so as to fit the part,—one to the left præcordial region, and another exactly opposite on the back, in such a manner, that the magnetic current shall traverse the affected part. This method is not infallible, any more than others employed in nervous cases; but I must say that it has succeeded better in my hands in the case of angina, than any other, as well in relieving the paroxysm, as in keeping it off." And he subsequently assures us, that when the magnet affords little relief, a good effect has followed the application of a small blister under the anterior plate. (Translation, p. 693.)

Should our remedies unfortunately fail in producing any

relief during a paroxysm of angina pectoris, we have the consolation to know that much may be done, in a great majority of cases, in the way of preventing a return of the disease. Fatigue and violent exercise, together with all excesses, are to be carefully avoided, as also stimulants, and the application of cold to the surface of the body. The diet of a patient so circumstanced, must be light, dry, and easy of digestion, and he should limit himself to a certain quantity of food by weight; and he should not drink more than is necessary to allay thirst, or is found sufficient for the purposes of digestion. Peculiar attention must be paid to the state of the bowels, to prevent constipation; and the patient should regulate himself by medicines, or other means, in such a manner, that he shall have one or two stools daily.

CHAP. III.

PERICARDITIS AND CARDITIS.

PERICARDITIS.

This is a disease, which is seldom so well marked in its characters, as the importance of the organ affected would lead us to expect. It is sometimes so insidious as to produce considerable disorganization before severe symptoms appear to attract our attention; at others, it creates constitutional disturbance, which indicates a disease of great severity; but our attention becomes fixed, perhaps, upon some local pain, at a distance from the seat of the disease, to relieve which, our best efforts are directed. In truth, as Laennec observes,—"There are few diseases attended by more variable symptoms, or of more difficult diagnosis than this." And he assures us that it is as frequently mistaken as recognized:—"This is the result (says he) of my own experience up to the present time; and to mine I may add that of many of my medical brethren, and among others, M. Recamier." Cullen confesses that he knew little upon this subject,—so little, that he has not devoted more than twenty-seven lines, in his work on the practice of physic, to the consideration of carditis and pericarditis; and his concluding words are,—"There is therefore, upon the whole, no room for our treating more particularly of inflammation of the heart or pericardium." (Par. 383.) Nevertheless, he has given the following definition:—"Pyrexia; pain in the region of the heart; anxiety; difficult respiration; cough; unequal pulse; palpitation; syncope." All systema-

tic authors seem unfortunately to have followed this definition, in the descriptions which they have given of this disease, instead of copying from nature.

By pericarditis, I mean an inflammation of an acute, subacute, or chronic nature of the serous membrane which lines the pericardium, and also that which gives an external covering to the heart itself, and the roots of the great vessels. In describing the phenomena of this disease, it must be kept in recollection, that in this, as well as in other inflammatory affections, a great number of varieties occur, giving rise to symptoms more or less urgent. In two or three instances, I have seen the symptoms so urgent, as to produce great affliction; in these, the pain was situated in the region of the heart, increased on taking an inspiration, as well as by any considerable motion of the trunk, which produced a tendency to syncope; the breathing was anxious and irregular, rather than difficult; there was cough, but slight in proportion to the anxiety of the breathing; the countenance was sharp, and peculiarly expressive of distress; the pulse was regular at first, but small like a wire; it generally becomes irregular, however, during the act of speaking, and when the patient moves. It is of great consequence, in all severe diseases, to compare the strength of the pulse at the wrist, with the impulse of the heart, by attending to its action, either by placing the hand over the præcordial region, or by applying the ear in the same situation; and this precaution is peculiarly necessary in diseases of the heart and pericardium. In the latter, the pulse, as already stated, is generally wiry and small, when the action of the heart itself is excessively strong, or perhaps I should have rather said, tumultuous. Even in insidious cases, an inequality will sometimes be perceived between the strength of the heart's action, and that of the pulse at the wrist. A case lately occurred to me of an insidious nature, which I shall briefly relate:—A middle-aged gentleman, having an extraordinary curvature of the spine, but who had, nevertheless, enjoyed robust health, remarkable for agility and muscular strength, called at my house to seek advice. He told me that, for a week previously, he had been affected with an asthmatic complaint,

which had now increased to such a degree, that he could scarcely use any exercise; that he passed sleepless nights; was afflicted with cough, attended by some expectoration; but he described his greatest suffering to proceed, from violent spasmodic contractions, affecting the muscles of the extremities. He had not lost much flesh, but laboured under considerable oppression and debility. On examining the chest, he was found to be somewhat chicken-breasted; he was unable to fill his lungs completely; the action of the heart was felt over a large space, tumultuous and irregular, intermitting occasionally six times in the minute, generally, three or four; the pulse at the wrist having the same irregular and intermittent character, but it was small and weak in proportion to the strength of the heart's action. He stated that his appetite was bad, that it was almost impossible for him to keep his extremities warm, and that he attributed a great part of his complaint to flatulency. I desired him to go home, upon no account to venture out again, and that I would call to see him. Next day I found him rather better, having had several copious stools, with which he passed a great quantity of flatus; —this was on Wednesday. On Thursday and Friday he still continued to improve; but I had no doubt he laboured under an affection of the heart, and, much to his disappointment, gave strict orders that he was on no account to go out. On Saturday, I found him very ill, complaining of great oppression in his breast, and difficulty of breathing; but his chief suffering proceeded from cramps in his extremities, and occasional spasmodic rigidity of the whole body, which was sometimes bent backwards, supported by the occiput and heels; and his landlady said, that the spasms were so severe during the night, that he could scarcely be kept in bed. He died suddenly in the course of the following night. On dissection, the brain was found to be quite healthy, as was the spinal marrow, except that a very old adhesion was discovered, and two or three small ossific scales on the surface of the arachnoid membrane. The pericardium was large, and contained a considerable quantity of turbid serum, with a deposition of lymph, adhering, in various places, to the surface of the heart, but which was more

abundant at the roots of the great vessels; the heart itself was large, but did not seem disproportioned in its different parts; the valves were sound. That I mistook the case, is very evident, and it is related expressly to shew the circumstances which led me astray in the investigation. Had the individual not had a deformed spine, and the severe cramps, I should, in all probability, have detected the true nature of the disease. I considered the dyspnœa to proceed from a nervous affection of the lungs, complicated with enlargement of the heart. Previously to the occurrence of this case, I would have declared it to be impossible for any one labouring under pericarditis, to be able to walk more than half a mile up a hill, which this gentleman did when he came to me, on the Tuesday before his death; and when returning home, before he reached his lodgings, he had to mount three flights of stairs.

It has been already mentioned, that Laennec and other practical physicians agree, that, in the present state of our science, we are not acquainted with any symptoms which point out, with certainty, the presence of pericarditis. Perhaps this is more to be attributed, however, to imperfect observation of the cases which have occurred, (a very good example of which is quoted above,) than to the obscure nature of the disease itself. M. Louis thinks that our ignorance of diagnostic signs is to be attributed to our imperfect observations,—and in this opinion Dr Scott concurs. According to these gentlemen, the observations of authors have generally been incomplete,—many of the means of diagnosis have been neglected, and several circumstances of the greatest importance in forming an opinion of the nature of the disease, have been overlooked. From his own observations on this disease, and from an analysis of the cases on record, M. Louis is inclined to draw the following conclusions:—that pericarditis is characterized by pain in the region of the heart, sometimes extending to the back and epigastrium, attacking the patient suddenly, and accompanied with a greater or less degree of oppression, and in certain cases with palpitations. It is also characterized by irregularity and intermission of the pulse, and more particularly by a dull sound

in the præcordial region, the other parts of the left side of the thorax remaining perfectly sonorous. Syncope also sometimes accompanies these symptoms, and occasionally infiltration of the extremities,—this probably, however, only takes place when the progress of the disease has not been very rapid; but when it does appear, as it is one of the symptoms of disease of the heart, it ought particularly to fix our attention, and lead us to suspect an affection of that organ, or confirm our diagnosis, if we have already formed one. From the cases on record, he thinks that the disease may be detected in half of the cases where it exists; and when free from complication, he considers it to be as easily recognizable as the best marked pleurisy.

Causes.—These are, generally speaking, the same as produce other inflammatory affections within the chest. It may also be attributed to moral causes, such as grief and anxiety; and there can be no doubt that it is often occasioned by a sudden metastasis during the course of rheumatism and gout.

Appearances on Dissection.—There is very seldom any redness to be seen in the acute affection; but we always find flakes of lymph floating, in a larger or smaller quantity of serum, and attached to the membrane itself. Sometimes the pericardium is amazingly distended, containing a quart, and even more, of this fluid. When any redness is observed, it is generally in small spots upon the surface of the pericardium. In some chronic cases, the pericardium is much thickened, and the heart enveloped with exudation. As Laennec very justly observes, it rarely presents the appearances of an equable membranous layer, like the false membrane of pleurisy; on the contrary, its surface is most frequently marked by a great number of rough and irregular prominences. If the patient survive the first effects of the effusion, the lymphy part becomes quickly absorbed, and afterwards we find the albuminous matter slightly glueing the pericardium to the heart. I have seen some cases where there was apparently no serous effusion, but a considerable quan-

tity of lymph thrown out everywhere over the heart. Occasionally on dissection, we find the pericardium closely attached to the heart, forming a dense fibro-cartilaginous mass, incapable of being separated, even by dissection, from the proper membrane of the heart. Within these few years, I have seen two cases of this sort: one individual died during an attack of erysipelas, from the united effects of inflammation of the membranes of the brain and mucous membrane of the lungs; the disease in the pericardium must have been of very long standing, but he enjoyed, nevertheless, excellent health, and great activity of body and mind, up to the period of his last illness.—The subject of the other case was a young, athletic man, who died from inflammation of the substance of the brain after a very short illness. About a year previously, he had a severe indisposition, which was supposed to be hepatitis; and he was treated accordingly. After being in considerable danger, however, he gradually recovered health and strength. On dissection, the pericardium was found thickened and indurated, and adhering firmly to every part of the heart, it being impossible to separate it in many places, even by careful dissection, without also taking away the proper membrane of the heart. These two cases, and several others which I could quote, completely disprove the assertion of Corvisart, that no person can live, and preserve a good state of health, who is affected with a complete and close adhesion of the pericardium to the heart. On other occasions, the false membrane appears to be converted into cellular substance; and, although united to the heart, it can be easily separated.

On the surface of the heart, we sometimes observe opaque, white spots, generally of an oval figure, about an inch in length, sometimes much smaller, and at others, very much larger. A great difference of opinion prevails respecting the true nature of these spots. From my own observations, and examinations after death, I have no doubt that they are the result of a partial inflammatory action on the surface of the proper covering of the heart. I used formerly to find it impossible to separate these in such a manner

as to prove whether they were on the outside, or beneath the serous membrane. At last, after submitting the parts to maceration for a few days, I have been able to remove them completely from the heart, leaving the serous membrane untouched, and apparently in a healthy state.—Baillie and Laennec are of the same opinion; Corvisart, on the other hand, considers these productions to be situated beneath the serous membrane, and entirely unconnected with inflammatory action.

Laennec states, that a tuberculous formation may sometimes take place, and thereby convert the acute into the chronic disease, as it frequently happens in the case of pleurisy and peritonitis, of which he has seen two instances; a third is noticed by Corvisart; and I have seen one case of it myself, in a man who died of a surgical disease, quite unconnected with that of the heart.

The muscular substance of the heart, in many of these cases, looks whitish, as if it had been macerated. Corvisart, and many others, suppose this loss of colour, particularly when attended by softening, to be a sign of inflammation in the substance of the heart itself; but I feel disposed to join Laennec, in doubting the correctness of this opinion; who states, that we can never be sure of the existence of inflammation in a muscular organ, unless we find a deposition of pus, or lymph, among its fibres.

Treatment.—If the disease be detected early, there can be no doubt of the propriety of general bleeding carried to the utmost extent the patient can bear, and repeated or not, according to circumstances. Leeches are also to be had recourse to, when necessary; and it must be always recollected, in treating an inflammation of a vital organ, that decision and promptness are of the utmost consequence to the patient. Antimony is subsequently to be used, together with counter-irritation. Purgatives must also be occasionally employed, together with the strict antiphlogistic regimen.

If called late to a case, and when general blood-letting would be, perhaps, attended with immediate danger, we must have recourse to local abstractions of blood, by means of

leeches, and throw mercury into the system as quickly as possible. I am disposed to attribute the recovery of the last of the two cases already quoted, in which the pericardium was found attached to the heart, to the action of mercury, which was administered for the supposed hepatitis.

CARDITIS.

Inflammation of the proper substance of the heart, is a very rare disease; I have only seen one case of it, which was treated for the affection commonly known by the term *angina pectoris*. The symptoms were unusually acute, and continued for four or five weeks, the patient never passing a night without fever, and never two days without having several severe paroxysms of suffering.

In general, however, the symptoms are represented as being similar to those which arise from inflammation of the pericardium, and it appears probable that the two diseases have been often confounded.

Appearances on Dissection.—Redness, and even injection of the capillaries, are equivocal signs of inflammation of the heart; so is some degree of softening of that organ, which, although sometimes observed after symptoms which indicated disease of the heart, yet is oftener seen when such signs did not exist; and I am convinced that the state which is usually noted down in reports of dissections, as softening of the heart, is frequently nothing more than the natural progress towards decay. Laennec states, that he has only met with one instance of an abscess in the walls of the heart. The subject was a child twelve years old; the abscess was situated in the parietes of the left ventricle, and might have contained a filbert. In another case of a man of sixty years old, he found an albuminous exudation, of the consistence of boiled white of egg, and of the colour of pus, deposited among the muscular fibres of the left ventricle. "The patient had presented symptoms of an acute inflammation of some of the thoracic viscera, without precisely indicating its site. Orthopnœa, and a feeling of inexpressible anguish, had been the chief symp-

toms." (Page 621.) In the case to which I have already alluded, a deposition of a matter, whether pus or lymph could not be determined, was found near the apex of the heart, in the substance of the left ventricle. I would particularly refer the reader to Dr Gairdner's interesting case of carditis, recorded in the 2d vol. of the "Medico-Chirurgical Transactions of Edinburgh." The subject of it died of another disease, eight months after the original attack, and the following is an abstract of the appearances in the heart: "Near to the apex of the heart, we found a layer of dense, organized lymph, closely investing a part of the parietes of both ventricles. On attempting to separate a portion of this layer, it was found to be firmly united to the substance of the organ, dipping between its muscular fibres, in the form of dense cellular tissue." (Page 241.) The symptoms in this case, were, preternaturally violent and rapid action of the heart, and a sensation of throbbing in the temples, with head-ache.

Ulcerations of the heart, according to Laennec, have been more frequently observed than abscess, but it would seem they are more common on the internal surfaces of the heart, than on the external. Dr Baillie observes, that although authors have mentioned cases of abscesses and ulcers of the heart, he is persuaded they are extremely rare. (Morbid Anatomy, p. 20.) He also states, that mortification still more rarely takes place. Lieutaud, however, notices it, (Tom. 2. p. 33.) Dr James Kennedy, late of Glasgow, has published a most interesting paper upon this subject, in illustration of a case of acute carditis, terminating in gangrene of the heart, in the "Medical Repository" for April 1824, which is well worthy of perusal. It contains sufficient proof, not only of the author's skill in pathological enquiries, but of his critical acumen. On dissection, it is stated, that "twenty ounces of turbid serum were taken from the chest; it had an impure orange colour, and a fetid smell. The pericardium enclosed four ounces of a fluid in all respects similar. On the internal surface of this capsule, was much vascular net-work, dark, as if composed of injected veins. All parts of the heart, external and internal, exhibited distinct marks of having been the seat of gangrenous inflammation. They were preternaturally

flaccid, and dark in colour, as the darkest coagulated venous blood; they could be easily perforated in every direction by the finger. When thus torn, they exhaled a putrid odour, but no blood exuded from their ruptured vessels. The left ventricle, in particular, was quite livid, and destitute of its muscular tenacity; it was little firmer than cerebral structure. When lacerated, it threw out a most offensive odour, not different from what is generated by putrescent animal substance. All the cavities of the heart were empty; but the large veins, especially the abdominal, were loaded with grumous blood." (Page 279.)

Treatment—Is the same as formerly recommended in pericarditis. The result of Dr Gairdner's case, is a strong proof in favour of large bleeding, which prevented the diseased action from spreading, and preserved life, even after extensive disorganization had already taken place. He took thirty ounces of blood from a vein in the arm, on the 16th March; on the 17th, it was repeated in the same quantity; and again on the 18th, the doctor states, he "ventured" on another equally "copious" abstraction of blood. During that night, from the shifting of the bandage, he lost several ounces more, and subsequently had leeches applied.

CHAP. IV.

HYPERTROPHY OF THE HEART.

By hypertrophy is understood a thickening or increase in the muscular substance, of one or more of the cavities of the heart. This may perhaps be considered rather as a morbid disposition, than a real organic disease; that is to say, in its simplest state it may continue for an indefinite period; it is seldom fatal of itself, and proves so, either from the causes which have given rise to it, or from the diseases which it may induce.

Hypertrophy frequently exists without complication; at other times, we meet with it combined with ossification of the valves, &c. In this class of diseases, as well as in most others, we are constantly to bear in mind, that when one part, or one organ, labours under disease, others in a short time give evidence of participation.

I shall describe this disease in its most simple state, pointing out the essential symptoms which attend it; but at the same time, young practitioners should be warned, that they must not expect to meet the disease constantly under the precise form in which it is delineated. After due deliberation, with regard to the different arrangements which have been adopted in treating of hypertrophy, Dr Scott and I give a decided preference to that of Bertin, who describes it under three forms; 1. simple hypertrophy, without change in the capacity of the cavities of the heart; 2. with the increase in

the capacity of the cavities of the heart,—the *active aneurism* of Corvisart,—the *hypertrophy with dilatation* of Laennec, which is the most common form of the disease; 3. hypertrophy with diminution in the capacity of the cavities of the heart.

Hypertrophy is more common in the left ventricle than in the right, and is rarely, though occasionally, met with in the auricles. When the whole heart is affected, it sometimes attains a most enormous size, appearing, when the thorax is opened, to fill the whole of the left cavity.

In the natural state, the heart is about the size of the closed fist of the subject, but not tightly clenched. The thickness of the walls of the left ventricle is more than double that of the right, and of sufficient firmness not to collapse when cut into. The right ventricle, however, does collapse when so treated; it is a little larger than the left, and the columnæ carneæ are of a larger size.

In the diseased state, we sometimes find the heart even three or four times the size mentioned above; and when the left ventricle is affected, its walls are frequently more than an inch, or even an inch and a half in thickness,—the greatest increase is at the base of the heart, decreasing towards the apex; although this rule is occasionally reversed. The columnæ carneæ also acquire a proportionate enlargement, and even the septum between the ventricles participates in the disease.

The capacity is sometimes so much diminished, that Laennec informs us, in a heart double its natural size, he has seen it so small, as scarcely to contain an almond in its shell. In such cases, the apex of the heart is blunted, and formed entirely by the left ventricle, which appears to constitute the whole of the heart, the right looking more like a process of it.

In hypertrophy of the right ventricle, the thickening is never so great as in the left, and it is more uniform.

The causes of the disease have been already alluded to. The increase in the nutrition of the heart, has been compared to that of the muscles of the arm of the blacksmith; and all causes capable of increasing the action of the heart, have been assigned as the sources of hypertrophy; such are all affections

of the lungs, impeding or retarding the circulation between the right and left cavities of the heart; and there can be no doubt, that individuals of a sanguine and plethoric temperament are most subject to this disease.

Signs of Hypertrophy of the Left Ventricle.—The general symptoms have been already mentioned. The patient, however, in this disease, is less subject to violent attacks of palpitation, but he is more sensible to the constant sensation of the action of the heart, than in most others. On applying the hand to the chest, it is met by a strong and extended pulsation, sometimes as if the whole heart were raised against the hand, at other times only its apex. The pulse is generally full, strong, and vibrating, appearing as if the artery were constantly distended.

The raising of the ribs is quite evident to the eye, and in hypertrophy with increase of capacity, the action of the heart can be heard at some distance from the patient. The sound on percussion is dull, and on applying the stethoscope between the cartilages of the fifth and sixth ribs, a very strong impulse is felt, sufficient to raise the head of the observer, and accompanied with a duller sound than natural,—it is more prolonged in proportion as the thickening is more considerable. The contraction of the auricle is very short, and productive of little sound.

We must here distinguish between the simple hypertrophy, and the hypertrophy with increase in the capacity of the cavity. In the former, the sound is confined to a very limited space, it is scarcely perceptible under the left clavicle, and forms a remarkable contrast to the force of the shock; in the latter, the intensity of the sound is also increased,—we have the strong impulse as in hypertrophy, and the loud sound as in dilatation. The sound is sometimes so great, as to be heard over every part of the chest. The pulsations of the carotid and other arteries, are frequently visible.

Signs of Hypertrophy of the Right Ventricle.—The signs are precisely the same as already described; that is to say, the heart, as explored by the cylinder, gives precisely the same results; only in the present case, the shock of the heart's action

is greater at the bottom of the sternum, than between the cartilages of the fifth and seventh ribs, which is the reverse of what takes place when the disease is in the left side of the organ. This sign, drawn from the place where the heart is heard beating with the most force, according to Laennec, is altogether infallible. Lancisi described a swelling and pulsation of the jugular, as a sign of aneurism of the right ventricle. This symptom was rejected by Corvisart, who says he has seen it where there was hypertrophy of the left side. Laennec differs with Lancisi, and he informs us, that he never met with it in hypertrophy of the left ventricle, unless there existed at the same time a similar affection of the right; while he has uniformly seen it wherever the right side was affected in a severe degree. We may, therefore, regard this as a pretty certain sign.

Hypertrophy of the auricles, considered as a disease, is not of much importance, and is always consecutive to some other affection,—either to a disease of the valves, or some obstacle to the circulation. Under the cylinder, instead of its usual clear sound, it gives one that is dull and obscure, and Laennec has added the following negative sign. In many cases of hypertrophy, while exploring the region of the heart, we scarcely perceive the sound of the contraction of the auricles. If, however, we apply the instrument to the top of the sternum, below the clavicles, or on the sides, we hear the sound of the contraction very distinctly, and often very loudly. This appears to him to indicate positively, that the auricles are in a sound state.

Hypertrophy is sometimes primitive, but is most frequently consecutive to some other disease. It most frequently proves fatal by the effect which it produces on other organs, more especially on the brain and lungs.

No fact is better ascertained, than the influence which simple hypertrophy exerts in producing apoplexy, or softening in the brain. The attention of practitioners has been particularly called to this, by Le Gallois, Richerand, Bricheteau, Lallemand, and Bertin; and it is somewhat surprising to find a learned editor of the Edinburgh Medical Journal informing us in 1828, that "no pathologist has particularly examined

those effects, to which the diseases of circulation give rise in the cerebral organ," appearing also to claim this as a discovery of his own, as well as making incisions in whittloes! There never were individuals, who better understood the mystery "*of hanging great weights to small wires,*" than the editors of this *debilitated* periodical.

Treatment.—Whether the analogy between hypertrophy of the heart, and the muscles of the blacksmith's arm, be true in a pathological sense, or not, I could quote a number of cases in which it is supported by the result of medical treatment. Of all diseases of the heart, hypertrophy is that, in which the treatment of Valsalva will, in general, be found advantageous, even when complicated with some degree of dilatation. I could relate several cases, not only from my own experience, but from that of Dr Scott, in support of this opinion.

The lancet is necessary, only in those cases, in which we are obliged to diminish plethora more quickly than can be done by diet and purgative medicines, and reduce the violent action of the heart, when danger is threatened to the head or lungs. But, in general, it will be sufficient to keep the patient quiet, both with respect to bodily and mental exertion, and to prevent him from speaking. Great benefit is frequently obtained from the occasional use of a weak solution of antimony, so as to produce the slightest possible degree of nausea. He should sleep in a well-aired apartment, remote from every noise, and under as few bed-clothes as possible. With respect to his diet, it will be sufficient to say, that it ought to consist of biscuit or toasted bread, in such quantity as will merely keep soul and body together; the quantity of fluid should also be regulated, and must at once be considerably reduced. Should he complain of hunger, or be inclined to take liberties with himself in any way, he may be readily enough controlled, by two or three additional doses of antimony, which for that purpose should be given in different forms,—sometimes in solution, to which substances may be added to change the colour,—sometimes in powder,—and sometimes in the form of pill. If there is any pain in the

region of the heart, the occasional application of leeches is advantageous. The length of time necessary to persevere in this restricted regimen, must entirely depend, upon the severity of the symptoms, the nature of the disease, and the prospect we may have, of being able ultimately to cure the affection. Sometimes I have seen the benefit of this plan felt by the patient himself within a few hours, particularly in two cases which have been lately under my care. The subject of one is a physician, whose complaints had been gradually stealing on for many months; his hair dropped out; he became emaciated; he felt considerable debility, with impaired appetite; his nights were restless; and I was not sent for till dyspnœa and oppression in the chest were so great as to threaten speedy death. I found his heart in a state of hypertrophy, and that he was threatened with hemoptysis. After bleeding him to sufficient extent, he was put under the antimonial treatment, and starved; notwithstanding which, he began to increase in flesh and strength as soon as the antimony was omitted, and he had perseverance enough to live for a considerable time on two biscuits in the day, taking only as much fluid as was sufficient to enable his stomach to digest them. In the course of some time, he was allowed to take a little fruit, which disagreed with his stomach, produced indigestion and flatulent distension, and occasioned a temporary return of the former symptoms, proving in a remarkable manner, the necessity of keeping the state of the stomach and bowels constantly in view, when treating diseases of the heart; and I so heartily coincide with the excellent remarks of Dr Forbes on this subject, that I cannot forbear quoting his words. "One great principle (says he, Note, p. 687.) is of paramount importance; it is the removal of all disorder in other organs, which can act as a source of irritation to the heart; and I would here add, that from its powerful influence (gastric irritation) in stimulating the organs of circulation to increased action, its previous cure becomes essential to the success of our measures for remedying the disease of the heart."

The other case to which I have alluded, although complicated with dilatation, and also extensive disease of the valves, occurred in the person of a gentleman who had been indis-

posed for six months; the effects of the treatment were felt within a few hours from its commencement, and he enjoyed good sound sleep that very night, for the first time since his illness, and has continued to sleep well ever since; he has increased in strength and flesh; the impulse of the heart has been daily declining; the agony which he felt in his chest, and outwards to the arms, has ceased; cough, dyspnœa, and expectoration, with which he had been affected from the commencement of his illness, disappeared after the third day from the beginning of the treatment.

By degrees, we are to allow the patient to return to an animal diet, which is better, when used in moderate quantity, than having his stomach filled with farinaceous food; and in order to prevent either a wilful or an accidental error, the exact quantity of food allowed in twenty-four hours, should be given by weight, and liquids by measure.

The antimony ointment is to be rubbed over the region of the heart, and irritation on the surface should be supported for a few weeks, every now and then, while the cure is going on. I think it best not to have recourse to it, however, till such time as the restrictions of diet are about to be a little relaxed.

CHAP. V.

DILATATION OF THE HEART.

The essence, if it may be so expressed, of this disease, consists in enlargement of the capacity of one or more cavities of the heart. Dilatation, complicated with hypertrophy, has already been described; in the morbid alteration now to be mentioned, the walls are much thinner than natural, commonly conjoined with a degree of softening of the muscular substance, and some change in the colour, which is either more purple or paler than natural. This disease is the "*passive aneurism*" of Corvisart. According to Bertin, there are three forms of dilatation:—1*st*, Dilatation with the thickening of the walls of the heart, which has already been treated of, under the title "Hypertrophy;"—2*d*, Dilatation with thinness of the walls;—and 3*d*, Dilatation without any change in the walls. He has also well observed, that the orifices of the heart frequently partake of the dilatation of the cavities, insomuch that the valves become insufficient to close them.

Dilatation is sometimes confined to one ventricle, though it more commonly affects both. The heart is more dilated in breadth than in length, and therefore assumes a kind of rounded form.

The causes of this disease are ascribed by Bertin to some obstacle in the course of the blood, such as disease of the valves: this must be admitted; but probably the most frequent cause is, as stated by Laennec, a congenital dispropor-

tion in the parts of the heart. In some cases, the *foramen ovale* is found open to a considerable extent, as is shewn in the case which will be presently related.

Symptoms.—Patients affected with dilatation, are more liable to sudden attacks of palpitation and dyspnœa, on any violent emotion, than those with hypertrophy. And the pulse is soft, weak, and undulating.

J. M. aged 29, a medical student, very tall, stooping in his gait, of a fair complexion and light hair, had been affected for about a year with symptoms which he attributed to disorder of the stomach. He complained of a feeling of distension and weight in the epigastrium. Occasionally, he was troubled with a short, dry cough, and palpitation of the heart, excited generally by any sudden or unusual exertion. The pulse was naturally slow and full.

These symptoms gradually became more constant and troublesome. In July and August 1823, he had occasion to exert himself considerably in his professional pursuits, and the feeling of uneasiness in the epigastrium, and palpitation at the heart, proportionally increased, but appeared to him to be constantly relieved, when his bowels, which were generally costive, became relaxed by the use of medicine.

In September, his complaints were much aggravated; towards evening, the short, tickling cough became exceedingly troublesome, and, when he placed himself in the recumbent posture, he was frequently seized with feelings of suffocation, which forced him to sit up. The difficulty of breathing, accompanied by a sensation of constriction in the breast, was at times considerable; and the paroxysms which seized him during the night, he compared to asthmatic fits. He was frequently obliged to rise during the night; and when he did sleep, was often suddenly awakened by the sense of suffocation. Towards morning, he became easier, and enjoyed some rest. During the day, he was comparatively well. He was thin and pale, but complained little, except of want of rest. He went about his medical studies with ardour and assiduity; but on making any unusual exertion, he was immediately

seized with the short cough, and, on mounting a flight of steps, or an ascent of any kind, he was often obliged to stop suddenly. On walking quick, his strength failed, and he complained that his limbs refused to perform their office. On examining the pulsation of the heart at this period, it appeared to be placed immediately under the hand; instead of the usual quick and hard stroke, a prolonged pulsatory throb was distinguishable, extending over a larger than usual surface. To the stethoscope, both the left auricle and ventricle gave a clear, sharp sound, distinctly observable, also, under the clavicle of the right side.

In October and November, he became gradually worse. The paroxysms at night were more frequent and more troublesome; and he was generally obliged to sleep in the sitting posture. He sometimes, however, passed days and nights pretty comfortably, and he believed that this was principally the case when his bowels were freely opened.

In December, the oppression and sense of fulness in the epigastrium increased to so great a degree, as to render the slightest pressure on the part insufferable. The veins of the neck were observed, at this time, to be full, and a strong pulsatory motion was given to them above the clavicle. He still continued his studies with ardour, and refused to confine himself; but on mounting stairs, or walking quicker than usual, he became completely exhausted, and was often obliged to rest himself. On the 12th December, he felt himself much worse, and weaker. On the 14th, a material change for the worse had taken place; his face was pale and anxious, the lips blueish, and the ancles œdematous;—still he conversed cheerfully, and without the least alarm. The pulse was small, and about 120. On applying the hand to the region of the heart, the usual quick, hard beat, was not to be felt; but there was a kind of violent pulsatory struggle perceptible over a considerable space. A physician saw him, and the medicines he recommended were employed with great apparent benefit. Mr M. thought himself better;—the œdema of the legs disappeared, and the cough became less troublesome;—the palpitation at the heart had subsided; and he complained only of the sense of weight in the epigastrium. During the day, he was tolerably well, but about ten

at night, he became hot and exceedingly restless, continually shifting his posture in the vain hope of repose. This continued for some hours, when he generally sunk into a slumber, and continued till morning bathed in a copious perspiration. On Friday 26th, he was much worse. At 4 P. M. he was sitting up and conversing cheerfully; but his legs were more swollen; his pulse irregular; the pulsations of the heart could not be felt in the usual place, and an undulatory pulsatory feel was communicated to the hand, when placed on the epigastrium. About 8 o'clock, his breathing became oppressed, he sunk into slumber, and died without a struggle.

The body was examined about sixty hours after death. A great quantity of bloody serum seemed to have escaped, and still continued to flow from the mouth and nostrils. The body was much swollen, and the cellular membrane was distended with air; a quantity of serum flowed out on making the several incisions. About a pound and a half of bloody serum was found in each cavity of the thorax. The pericardium contained about three ounces of fluid. The heart was more than three times its usual size. It was of a deep brown colour, and destitute of fat. On examination, the right auricle was greatly increased in capacity, and extremely thin in its walls. The *foramen ovale* was sufficiently open to admit the point of the little finger into the left auricle. The right ventricle was nearly natural, as was also the left auricle. The left ventricle was of an enormous magnitude, and more resembled a large bag than a ventricle of the heart. It was more than three times its natural size, its walls of extreme thinness, and the fleshy columns widely separated from each other. The lungs were more than usually congested with blood; but they, as well as the viscera of the abdomen, were perfectly healthy.

The above case is interesting in many respects, and among others, in having the *foramen ovale* open, which was, in all probability, produced by the enormous dilatation of the right auricle; it is worthy of remark, that the communication between the right and left auricle existed without producing the disease termed Cyanosis or Blue Skin.

Signs of Dilatation.—The only certain sign is the clear sound of the heart with deficient impulse. Laennec says, the degree of distinctness of the sound, and its extent over the chest, are the measure of the dilatation; thus, when the sound of the contraction of the ventricles is as clear as that of the contraction of the auricles, and if it is at the same time perceptible on the right side of the back, the dilatation must be extreme.

Signs of the Left Ventricle.—A clear and sonorous contraction, between the fifth and seventh ribs of the left side.

Signs of the Right Ventricle.—The sound is heard somewhat better towards the bottom of the sternum, than in the region of the heart; to which may be added, in the language of Corvisart, a "greater degree of oppression, more marked serous diathesis, more frequent hæmoptysis, and a more livid state of the countenance," than in affections of the left ventricle.

According to Laennec, the most constant and characteristic of the equivocal signs of this affection, is, an habitually swollen state of the jugular veins without pulsation.

In concluding this part of the subject, it may be observed, that we have frequently combinations of different diseased states; thus we occasionally meet with dilatation of one ventricle, and hypertrophy of the other; but the comparative exploration of the two sides of the heart will enable us, after some practice with the stethoscope, to detect this. In other cases, we have dilatation of one ventricle and the opposite auricle. We also meet with cases in which the parietes of the dilated cavity are thickened in certain points of their extent,—thinned in others,—and in the remaining parts exhibiting their natural structure.

TUBERCULOUS FORMATION.

Various kinds of accidental productions have been found in the substance of the heart. I shall merely mention the enormous collections of fat which have been discovered about the pericardium and heart, because I have seen this condi-

tion frequently in subjects who have died of other diseases, and in whom no affection of the heart had ever displayed itself; at the same time, there are cases on record, in which the muscular structure was so much weakened, and the fibres so much separated by the interposition of fat, that it has appeared to be the cause of impeded action, and occasionally of rupture of the organ.

Ossific depositions in the walls of the heart are avowedly rare. Laennec met with two instances of this formation between the layers of the pericardium; the history of one of the cases, along with the dissection, (at p. 670. of the translation,) is well worthy of perusal. Baillie notices instances of this nature; one case fell under his own observation, in which the ossification had spread over a considerable portion of the pericardium, (p. 13.) He also says, (at p. 49.) "When a part of the heart is converted into an earthy matter or bone, no morbid symptoms whatever have in some cases been observed; and in others, there has been palpitation of the heart, with difficulty of breathing." But the author does not say that he had ever seen such cases.

I have seen one instance only of tubercular formation in the substance of the heart; Laennec states, that he has seen it three or four times. In the year 1826, some of my pupils were called upon to examine the body of a young woman, who dropt down dead without any previous indisposition. No diseased appearance was found any where but in the heart. On opening the pericardium, it was observed to contain a little serum. The surface of the heart was vascular, and there was some watery effusion beneath the serous membrane at several points. There were also two considerable projections, the largest at the apex of the heart, the other about the centre of the left ventricle; on making incisions at these parts, tuberculous masses were found occupying the whole thickness of the organ, of a soft cheesy consistence, at the apex, to the extent of an inch and a half in diameter, and at the left ventricle to that of an inch.

Upon inquiry, it was found that this individual had led a very irregular life, but had always enjoyed a good state of health.

ATROPHY OF THE HEART.

Diminution of the size of the heart is mentioned by most authors who have written upon diseases of this organ. Laennec states, that "the heart, like the muscles of voluntary motion, is clearly susceptible of diminution of size." It has been already observed, when treating of phthisis, that the hearts of individuals who have died of that disease, are uncommonly small; Laennec says, that he has thought he "could recognize a sort of withering of the organ indicative of its loss of volume." On examining the body of a woman, who died from the effects of a tumour, weighing above fifty pounds, which grew from the fundus of the uterus, and extended upwards, encroaching so much upon the thorax, that the diaphragm on the right side was pushed up as high as the first rib, the heart was found little above half its usual size, and was very much flattened by the pressure of the tumour, and its action had been so much impeded, that the pulse in any artery of the body could be scarcely felt for a considerable time before death. I have another heart in my possession, taken from an adult male, which is not larger than that of a child of six years old, in which both coronary arteries were found much ossified; in this case there could be no doubt, that the small size of the heart depended on a diminution of the nutritive process; the pulse at the wrist was exceedingly small for five or six months previous to death, and during the last two months, it was so weak that it could scarcely be counted. Laennec says, that he has never observed any symptom peculiar to atrophy of the heart. "I may remark, however, (he adds,) that several hypochondriacs, who are liable to faintings from very slight causes, gave, under the stethoscope, signs of a very small heart; and we know, moreover, that women, who are much more liable to these attacks than men, have in general smaller hearts." (Page 614.)

RUPTURE OF THE HEART.

We are assured by those who have had the best means of knowing, that this accident is very rare. Laennec thinks,

that these ruptures are generally produced by previous ulceration of the ventricular parietes, and Bertin is of the same opinion. Laennec states, that it is surprising, rupture of the heart does not more frequently happen in those cases of great accumulation of fat, reducing the walls of the ventricles to extreme thinness. According to Meckel, rupture of the heart most frequently takes place at the point of junction between the aorta and left ventricle; but this does not seem to accord with the observations of others. Bayle assures us, that in nineteen cases of rupture of the heart, fourteen took place in the left ventricle, principally on its anterior side near the apex; three in the right ventricle. In most of the subjects, the heart was remarkably soft, and the substance around the perforation was of a brown colour. Baillie's observations upon this subject are very loose, and not worthy of quotation. I have seen two cases of sudden death, in which the pericardium was found to contain a large quantity of coagulated blood. In one of these, the perforation through which the blood had issued, could not for some time be discovered, and when on the point of giving up the examination, a small rent, just capable of admitting the head of a pin, was found at the root of the aorta, which vessel was somewhat dilated, and its texture injured by incipient ossification.—The subject of the other case was a woman about fifty years of age, who had previously enjoyed a good state of health. The night before her death, she had walked from the south-west extremity of the Old Town of Edinburgh to Newhaven, and back again, a distance of about six miles, and had gone to bed without making any complaint. After a good night's rest, she got up in the morning, and fell down dead soon afterwards, whilst cleaning her shoes. On dissection, the pericardium was found greatly distended with coagulated blood; the aorta, much injured by ossification, was seen greatly dilated near its origin, where a small rupture existed, not above two lines in length.

Bertin mentions two instances of rupture of the auricles, which is more rare than that of the ventricles: in one of these, the rupture was produced by a fall; in the other, it occurred without any perceptible cause, and the heart was enormously loaded with fat.

We are assured by Laennec, that rupture of the auricles, ventricles, and large vessels within the pericardium, is not always followed by sudden death. In several cases, the blood accumulated in the pericardium, formed a solid coagulum, and checked for a time the hæmorrhage.

CHAP. VI.

DISEASES OF THE VALVES.

The valves of the right side of the heart are rarely the seat of the morbid conditions now to be described, which are, however, by no means uncommon in the mitral and aortic valves. They are liable to depositions of cartilaginous and osseous matter, which increases their thickness, alters their shape, and obstructs the orifices in which they are placed.

Sometimes the points of the semi-lunar valves are affected; at others, their bases; when they are affected throughout, they are deformed, and often coiled upon themselves; and when in this condition, they have frequently a red fleshy-looking appearance, smooth, and polished. Very often a small cartilaginous concretion is observed in the points of the semi-lunar valves, which may be considered as enlarged corpora sesamoidea, but which can scarcely impede the circulation, until they become of considerable size.

Sometimes these valves seem, as it were, to be encrusted with osseous matter; and I have seen instances, in which it was impossible to trace the inner membrane over the osseous projections. These vegetations frequently look like warts.

The cartilaginous induration of the mitral valve, is sometimes confined to the fibrous bands found in its base. In this case, it has the appearance of a very smooth, though unequal

ring, diminishing the orifice; it is sometimes of a semi-cartilaginous consistence; at others, it is formed of perfect cartilage. The same kind of appearances are occasionally met with in other parts of these valves, but those situated at the bases and points are usually the thickest.

The osseous productions are found in the same situations, and are very unequal as to thickness. Like those already described in the semi-lunar valves of the aorta, they are often found projecting from the mitral valve, denuded, and very rough. We are assured by Laennec, that they are not perfect bone, being whiter, more opaque, more fragile, evidently containing a greater proportion of phosphate of lime. They are sometimes situated on the free margins of this valve, diminishing greatly the size of the orifice; indeed, sometimes to so great an extent, as scarcely to admit the blade of a pen-knife, of which there are examples in my museum. Sometimes, though rarely, the tendinous chords of the mitral valve are affected in the same manner. In one case, Dr Forbes found three of the pillars of the mitral valve completely ossified through their whole extent, with the exception of a minute portion at each extremity.—(Original Cases, page 133.)

When the ossification is confined to the free margins of the sigmoid valves, or when the base is affected, if still slightly thickened, the valve may perform its functions provided the middle portion be still sound; but when the disease is extensive, the valves, according to Laennec, grow together, and get incurvated either towards their concave or convex side, in which state they are immoveable, being either fixed on the side of the aorta, or in the orifice of the ventricle.

Symptoms.—These are palpitations and dyspnœa, often to such a degree, as to be called asthma; both these symptoms are increased by quick exercise, or any unusual exertion or emotion. When the disorganization advances to a certain pitch, the palpitation and dyspnœa increase in frequency and violence; the pulse is weak, small, and thready, and occasionally intermits, which corresponds with intermissions in the contractions of the ventricles; the feet are observed to become œdematous

towards evening. At last, the symptoms denoting impeded circulation augment, the face and extremities become discoloured, the œdema extends to the legs, dropsical effusions take place into the different cavities, and the dyspnœa increases to such a degree, that the patient is obliged to remain in a sitting posture, or bent upon the edge of the bed, in a kneeling position.

According to Laennec, the following signs are observed. "The symptoms of ossification of the mitral valve, are little different from those attending the same affection of the sigmoid. According to M. Corvisart, the principal sign of the former lesion is 'a peculiar rustling sensation, *(bruissement,)* perceived on the application of the hand to the region of the heart.' This peculiar sensation is nothing else than the *purring thrill* already described. It is assuredly very frequently observed in the case of ossification of the mitral or sigmoid valves, when this exists in a high degree; but, as I formerly stated, it may exist when these valves are perfectly sound, and it is almost always absent when the induration is not so extensive as materially to obstruct the orifices. The bellows sound is a much more constant sign; it accompanies the contraction of the left auricle, when the mitral valve is affected, and that of the ventricle, when the induration is in the sigmoid. But even this is wanting when the alteration is not extensive, and as it is, moreover, very common when the heart is perfectly sound, we must lay no stress upon it as a sign, unless it be combined with other circumstances calculated to confirm the diagnosis. Accordingly, when the sound of the bellows, rasp, or file, persists in the left auricle, either continuously or interruptedly, for several months; when it is found only then, and exists even in the greatest quietude; when it is scarcely lessened by venesection, or when lessened, if it still leave behind it a degree of roughness in the sound of the auricle,—or, yet more, when the purring thrill co-exists with this, we may be assured that the auriculo-ventricular opening is contracted. If the same phenomena occur, under similar circumstances, in the left ventricle, we may be equally certain that the aortal orifice is contracted. Three or four times, during the last four years,

I have discovered this lesion by means of these signs. Three similar examples, equally verified by dissection, are recorded in M. Bertin's work, (Obs. 49, 50, 51); and a fourth is given in the collection of cases published by Dr Forbes, (Case vii.) But if these phenomena exist only for a time, although as much as two or three months; if they accompany the increase of any other nervous or organic disease of the heart, we must not depend upon them as indications of the lesions now in question, since all the facts formerly recounted, prove that these sounds are not produced (as might be imagined at first,) by the passage of the blood over a rough or rugged surface, but to the spasmodic energy requisite in the muscular contraction, to overcome the obstacles opposed to it. It follows, therefore, that any other cause besides diminution of the orifices, which occasions contraction of the heart, is equally capable of giving occasion to the bellows sound, and purring thrill; and it is fair to admit, that in the first edition of this work, I laid too much stress upon these two phenomena, as signs of the valvular disease. A slight degree of cartilaginous or bony induration of the valves, may exist for a long time without any visible alteration of the health, or even of the action of the heart; and even by proper measures of precaution, and by seasonable bleedings, we may frequently preserve for a long time the life of individuals, who present every sign of considerable contraction of the orifices."—(Forbes' Translation, page 634.)

Treatment.—The same as formerly recommended in other diseases of the heart; viz. to reduce and obviate plethora, to enjoin rest, to avoid every cause which can increase the quantity of blood, and hurry the circulation; and lastly, to moderate violent symptoms by applying leeches, counter-irritation, and administering an occasional opiate.

CHAP. VII.

DISEASES OF THE BLOOD-VESSELS.

The first disease which I shall notice is, inflammation of the internal membrane of the heart, and large vessels near it. There can be no doubt that this disease does take place, from the circumstance, that ulceration and false membrane have been found in various places, but it must be a very rare disease. Bertin, however, has written to prove that it is a common affection. There is no doubt, that the lining membrane of the heart, and of the large blood-vessels, is sometimes found of a brown or violet colour, and also a bright scarlet. It is a subject of controversy at this moment, whether this colouring is the effect of disease, or of imbibation of blood, which the vessels contained after death. From my own observations, I am led to conclude, that it is sometimes from the one cause, and sometimes from the other; and I think our conclusions must depend upon three circumstances. 1*st*, Whether any blood is found near the coloured portion? 2*dly*, Does blood found in the aorta, always impart a colour to its lining membrane? 3*dly*, Upon the texture of the part so affected. It has frequently occurred to me to find the aorta of a red, brown, or violet colour, when neither it nor the left ventricle contained any blood; and on the contrary, I have seen the aorta almost filled with blood, partly fluid, partly coagulated, when the inner membrane presented its usual straw colour. When so coloured, it has often occurred to me to find the inner mem-

brane soft and pulpy, and readily removed with the fingers; and I scarcely remember to have seen incipient ossification of the aorta, without observing a vivid redness of its internal membrane. This subject ought to be held as open to future investigation. The next point which has attracted the attention of pathologists, is the exudation of coagulable lymph. It is stated, that this has actually been found; Burns, for instance, distinctly describes it; Laennec says, that he has observed false membranes of small extent, strongly attached to the walls of the auricles; I cannot say that I have ever observed this appearance. The next subject worthy of attention is ulceration. Laennec seems very much to doubt the existence of ulcerations in this delicate membrane; he supposes the parts left by the separation of the bony incrustations of the aorta, to have been mistaken for ulceration; he also states, that small pustules have been sometimes met with beneath the inner membrane of the aorta, and which have discharged their contents into its cavity; and he asserts, that it is probable that what are called ulcers of the aorta, are formed in this manner, being the consequence of inflammation of the middle coat of the arteries, or of the fine cellular substance which unites this to the inner coat. In quoting these statements, it occurs to me to remark, that Laennec appears to be determined not to admit that inflammation of these parts can exist, and that he has manifested too much of the spirit of a special pleader. The last point which some individuals suppose indicative of inflammation of the inner membrane of the heart and blood-vessels, is the formation of concretions, well known by the name of *polypi*. One set of pathologists maintains, that they are the result of previous inflammatory action, which another denies, but hitherto neither party has been able to triumph over the other. It is a most interesting question in pathology, and therefore deserves minute investigation.

It does not appear, that this condition of the lining membrane of the heart and arteries is indicated by any particular symptoms, although some assert that it is the cause of inflammatory fever.

OSSIFICATION OF THE ARTERIES.

THE morbid condition which goes by this name, belongs to the class of imperfect ossifications. These seem to be produced in two ways ;—1*st*, By soft cartilaginous depositions, which are gradually converted into ossifications, by the deposition of small calcareous spots, which gradually extend. 2*dly*, By the deposition of a soft powdery substance between the inner and middle coats, without any cartilaginous formation ; this substance becomes gradually converted into ossific incrustations. Occasionally, ossified spots are found only here and there, but sometimes the whole vessel is affected. Some pathologists imagine, that this formation is not connected with inflammation,—this appears to be Laennec's opinion ; others maintain, that it is the consequence of inflammation. After careful observation, I have seen reason to embrace this last mentioned opinion, from remarking the state of parts in the incipient stage of the disease. It is now well ascertained, that these depositions are formed in the cellular substance, between the inner and muscular coats. In the latter stages, the inner membrane in many parts, from being removed, exposes the bare ossified surface ; but a very superficial examination in the early stages, will shew the proper seat of this formation to be as above described. This formation is frequently the cause of aneurism. All arteries do not seem equally disposed to take on this diseased action. The aorta, at its origin from the heart, is most frequently found affected, then the arch, and the descending aorta, the disease attacking the angles at which the vessels branch off, in preference to other parts. The arteries of the brain are very frequently found diseased in cases of apoplexy ; I have seen the most minute vessel that could be traced in the brain, in this condition ; and on one occasion, the circulation on one side of the circle of Willis was completely obstructed from the ossification of the vessel. The arteries of the superior extremities would seem to enjoy a singular immunity, whilst those of the lower extremities are often affected. This condition of the blood-vessels must influence the functions of various organs. I possess a beautiful preparation, shewing its effects upon the kidney,—one

emulgent being almost destroyed by ossification; the kidney which it supplied was in a state of atrophy, the other is seen very much enlarged.

ANEURISM.

THERE is no disease which shews the absurdity of the division of medicine into physic and surgery, more than this. When an aneurism is within reach of the knife, then it is called a surgical case; if otherwise, it is handed over to the physician. All writers describe aneurisms of two kinds, —the true and the false. I can join Laennec in stating, that "true aneurism of the ascending portion and arch of the aorta is very common." I have seen it more frequently in such a situation than the false aneurism; indeed, Laennec is of opinion, that false aneurism of the ascending aorta, or its arch, rarely, if ever, exists, unless formed by a rupture of the inner coat of a true aneurism, after it has acquired a certain size; at least, he states that he had never met with any other species of false aneurism in that situation, but that consequent to the true or simple dilatation of the part. The abdominal aorta is also the seat of aneurism; and the arteries of the brain are not exempt. Aneurisms of the aorta exist in various degrees, from slight dilatation, up to the size of the head of a full grown fœtus. According to my own experience, the vessel is found in one of three states:—1*st*, The walls more or less converted into ossific matter, looking scabrous and irregular, portions being easily separated in scales; in many instances, these scales are found loose, and already more or less detached from the vessel:—2*d*, That in which the whole of the coats of the aneurism are entire, much thickened, and cut under the knife like fibro-cartilage, having very much the same appearance:—3*d*, That in which a portion of the aneurismal sac is entirely awanting, in consequence of long continued pressure on surrounding parts; so that sometimes a portion of the lungs, and even the spine itself, has formed a part of the aneurismal tumour.

Aneurisms of the aorta, produce various effects on the neighbouring parts, according to their size and situation.

Laennec assures us, that simple dilatation, when in a moderate degree, hardly produces any effect; but that the most inconsiderable false aneurisms may give rise to very serious disorder. The first and most common of these effects, is compression of the heart and lungs, by impeding the circulation and respiration. When the aneurism is in contact with the lungs, it most commonly merely compresses them; sometimes, however, the substance of these organs gives way, and the aneurism, when it bursts, pours its blood directly into the air-cells; three remarkable cases of which I have already related when treating of hæmoptysis. Frequently the aneurism compresses the trachea, or one of the bronchial trunks, flattens and eventually destroys a part of it, and death ensues by a species of hæmoptysis from the rupture of the tumour. The same occasionally, but not so frequently, happens to the œsophagus. Sometimes the aneurism bursts into the pericardium; two cases of this are also quoted, (page 455.) Laennec states, that he never met with an example of it. The left cavity of the pleura, however, is by far the most frequent situation into which the rupture takes place. Laennec quotes a case recorded in the Bulletin de la Faculté de Medicine, in which an aneurism of the aorta burst into the pulmonary artery. He mentions a case where the thoracic duct was compressed and destroyed; and Corvisart notices a fatal instance from compression of the superior vena cava. Aneurisms often destroy a large portion of the vertebral column, and there can be no doubt that this destruction is the effect of interstitial absorption, not of caries. On the side next the vertebræ, the sack is also occasionally completely destroyed, and, to use the words of Laennec,—"the circulating blood is bounded by the naked bone." An instance of which occurred in my practice.

Aneurisms of the ascending aorta and arch, sometimes destroy portions of the sternum by their pressure, so that they are at length covered merely by the integuments; and those of the arch of the aorta, and of the innominata, occasionally project above the sternum.

There is no complaint more insidious than the one under

consideration; and many a sufferer has been supposed to be nervous, or hypochondriacal and fanciful, who was found, upon dissection, to have been affected with ossification of the arteries, or perhaps an internal aneurism. Laennec states, that aneurisms of the aorta cannot be detected till they shew themselves externally, and often the first indication of such an affection is the instantaneous death of the individual, from the effusion of blood into surrounding parts. The symptoms which are sometimes observed, are, oppression in the chest, dissimilarity of the pulse at the wrists; a whizzing or rushing at the top of the sternum, perceptible to the hand; obscure sound on percussion; rattling in the throat; and dragging down of the larynx, when the tumour compresses the trachea. In noticing these symptoms, he observes:—"In the present state of our knowledge, there assuredly exists no certain means of ascertaining the existence of this disease, until it shews itself externally. Even when the aneurismal tumour has made its way through the parietes of the chest, it is not always distinguishable from tumours of a different kind." And in another place, he distinctly asserts that his experience has been insufficient to enable him "to say how far the difficulty of diagnosis is likely to be removed by the use of the stethoscope." From my limited experience on this subject, it behoves me to speak with very great diffidence; but the little knowledge I do possess, induces me to join M. Bertin, who conceives that Laennec has undervalued the stethoscope in detecting aneurisms of the aorta.

Stethoscopic signs.—Strong beatings synchronous with the pulse; in general, a single pulsation is felt, which Laennec terms "simple," in contra-distinction to the pulsation of the heart, which is double. There is a greater impulse, and a louder sound, than the mere contraction of the ventricles produce. The single pulsation is generally accompanied by the bellows sound, "*bruit de soufflet*,"—these vary in situation, according to the site of the tumour. If the aneurism press upon the air-passages, a peculiar hissing sound will also be observed during the act of respiration or speaking. When the tumour is large, the chest at that part will sound dull upon percussion, and

sometimes, even the hand placed upon the part, will convey a vibrating sensation to the observer. Still, however, we must be cautious in pronouncing a diagnosis, as I have seen several cases lately, in which, from other causes, one pulsation only was heard; which appears to me to be produced by the long-continued action of one set of cavities, masking the sound of the other. Laennec speaks very confidently with respect to one point, which I shall give in his own words:—"If we find under the sternum, or below the right clavicle, the impulse of the circulatory organ, isochronous with the pulse, and perceptibly greater than that of the ventricles examined in the region of the heart, we have reason to suspect dilatation of the ascending aorta, or arch,—the more so, as it is extremely rare to feel the impulses of the organ of circulation beyond the region of the heart, even in cases of the most marked hypertrophy. If this phenomenon is found constant, after repeated examinations, we may consider the diagnosis as certain."

Treatment.—It is very difficult to give any general directions for the treatment of internal aneurism, further, than that quietness of body and mind should be enjoined, together with attention to keep the bowels open; and to recommend a dry, low diet. If there are at any time signs of plethora, it ought to be diminished by a moderate bleeding; if there is any local pain, we are to consider, whether it will be best subdued by the application of leeches, a counter-irritant, or an opiate. From the situation of an aneurism of the aorta, and its connection with neighbouring parts, we see at once, how the functions of the lungs may be impeded by mechanical pressure, independent entirely of the obstruction in the circulation;—how the brain may be affected by impeding the return of blood from the head;—and, also, how deglutition may be rendered difficult and even painful.

INFLAMMATION OF VEINS.

It would appear that we are, as yet, very much in the dark, respecting the functions which the venous system per-

forms, independent of returning the blood to the heart; and I feel convinced that we have, as yet, no idea of the part which inflammation of arteries and veins has, and particularly the latter, in different acute and chronic diseases. Many surgeons have yet to learn, that a great deal of the want of success which attends surgical operations, depends on the inflammation of veins, which they too frequently and unnecessarily tie.

Inflammation of veins may be produced by external injuries and surgical operations, even by the slight operation of phlebotomy. Some forms of rheumatism are nothing more than inflammation of veins; and I believe the great majority of cases which are supposed to be inflammation of absorbents, are also inflammation of veins. The great danger appears to proceed from the tendency which the inflammation has to extend itself towards the heart.

Symptoms.—Pain in the course of the vein increased on pressure; tension; swelling and inflammation of the cellular tissue in the neighbourhood, which at last involves the whole limb, when it frequently goes by the name of erysipelas, or diffuse cellular inflammation. When the vessel is near the surface, a red line follows its course, which feels knotty here and there; the limb cannot be moved without intolerable pain; abscesses frequently form in various parts, when the affection is often called phlegmonous erysipelas. I do not assert that erysipelas is always produced by inflammation of the venous system, or that inflammation of a vein will always extend to the surrounding parts, and produce erysipelas; but my experience, and morbid dissections, have convinced me that these circumstances not unfrequently take place; but I shall say more on this subject when treating of erysipelas.

The combination of symptoms denominated fever, takes place, and increases with the disease, and it is too often termed typhus; the circulation is seriously affected; the head suffers, and early delirium often occurs.

Inflammation of veins terminates in what is called resolution; that is to say, it is cured without injury to their structure. Suppuration is said to be the most common result of in-

flammation of veins; but it does not appear to me quite certain that pathologists have always been able to discriminate between pus and lymphy effusion. Sometimes the vein becomes obliterated by the thickening of its coats, either with or without adhesions, which form in the canal itself by means of lymph which is thrown out, or, as some allege, by pus, which concretes. When the principal trunk of a limb becomes impervious, infiltration into the cellular membrane takes place, producing a great enlargement of the extremity; and Dr D. D. Davis, Professor of Midwifery in the London University, has the great merit of being the first who discovered this to be the cause of the disease of child-bed, denominated *phlegmasia dolens;* a discovery which has not only thrown light upon the disease in question, but also upon surgical pathology.

Inflammation of veins sometimes, though rarely, terminates in ulceration and gangrene, involving the surrounding soft parts. Ossification of veins is rarely observed; I have only seen one instance of it in the crural vein. The arterial system was very much disorganized from the same cause. The preparation is in my museum.

PHLEGMASIA DOLENS.

Symptoms.—Some time after delivery, within the fourth or fifth week, pain, or some degree of uneasiness, is complained of in the hypogastric, lumbar, or inguinal region, with slight fulness at the upper part of the thigh, which soon increases, and extends downwards, affecting the labium on the same side. The progress of the tumefaction varies in different cases; in some, the enlargement takes place rapidly; thus, I have seen the limb attain nearly twice the size of the other, in the course of thirty hours, from the time the person first began to complain. Generally, however, the disease is more slow in its march, the swelling increasing to its greatest size in the space of from forty-eight to seventy hours. On examining the limb, it will be found to be tense; somewhat elastic; white; shining and hot; extremely painful, particularly upon pressure or motion. The patient is unable to move it herself, and experiences a sensation as if it were consi-

derably larger than it actually is. Most frequently the disease is confined to one side,—both limbs are rarely affected at once; but it sometimes happens, that as it declines in one leg it attacks the other.

Occasionally the pain is first felt in the calf of the leg, or the inner condyle of the knee, darting upwards and downwards; but in either case the tumefaction goes on rapidly. The pulse is frequent; the skin hot; and the thirst urgent, with great restlessness. The lochial discharge cannot be taken into account, as the disease seldom comes on till the period when it is nearly or completely suppressed.

The phenomena above described are frequently preceded by decided marks of uterine irritation, and often by rigors; indeed, the worst form of this complaint, is that which succeeds to peritonitis, and to symptoms indicating considerable irritation or inflammation of the membranes of the brain; and I have seen three instances in which women were attacked with phlegmasia dolens succeeding to head symptoms, which had been preceded by severe peritonitis.

The peculiarities of this disease are, that the limb is hot, white, and although swollen, the parts preserve nearly their relative proportions: in anasarca, the limb is generally cold; the swelling is greatest at the most depending part; and it pits on pressure, which does not happen, in the first stages at least, of phlegmasia dolens.

The duration of this curious affection is very various, depending much upon the constitution of the patient, the severity of the attack, and the mode of treatment in the early stage. In bad cases, which have been allowed to go on too long without applying the proper means, it is tedious and intractable, occupying weeks, and even months, leaving the patient, even then, feeble, and in a dangerous situation. Under such circumstances, the limb will rarely recover its former small size, and will be for a long period stiff and powerless.

It will be found that Mr White's description of the symptoms varies from that of Mr Brandon Trye, and both, somewhat, from that of Dr Hull; and Dr Dickson states that the march of the disease in the same woman varied in different attacks, which is exactly what I have myself noticed. In the

2d vol. of the " London Medico-Chirurgical Journal," it will be found that Dr Belcombe mentions the case of a lady, the mother of four children, who experienced three violent attacks of this disease, after giving birth to the first, third, and fourth child,—her labours having always been easy and natural, and her general health good, except a decided tendency to constipation. The first attack commenced with pain in the right groin; the second commenced with pain in the calf of the left leg. The third attack was the most severe of all, and commenced about four days after delivery, again with pain in the right groin, and after violently affecting that limb, attacked with equal, if not greater severity, the left; no lameness nor enlargement followed, but there was a tendency to swell in the evening, and a feeling of stiffness upon the least exertion. (Page 497.)

Phlegmasia dolens also occurs during pregnancy. In the same volume of the work above quoted, Dr Dickson mentions having seen one case during pregnancy, and relates another, which occurred to Mr Henderson, a surgeon in Bristol. He further states, that he is also indebted to the same gentleman, for an interesting example of this affection in the unmarried and unimpregnated female. Puzos relates three cases occurring during pregnancy. In Thomas's " Practice of Physic," mention is made of an instance of this affection happening in an aged woman. I have myself seen it under all these circumstances; and it now appears, as I shall subsequently shew, that it is not confined to the female sex.

Pathological Observations.—Some obscure hints are to be found in the works of Hippocrates, which would lead us to suppose he had seen the disease. Acastro, a very old author, makes some pointed remarks, in the seventeenth chapter of his third book, respecting swellings of the legs after parturition. The celebrated Wiseman notices a case, in the fifth chapter of the first book of his surgical works. Mauriceau, however, is the first author, as far as I know, who has given a tolerable account of its symptoms. The twentieth chapter of the first part of his works, is entitled, " Of the swelling of the limbs and thighs of women recently deliver-

ed." Puzos and Leveret also mention it, and suppose it to be produced by a translation of milk, which they imagine to be infiltrated into the limb. Mr White of Manchester was of opinion, that the disease is owing to the bursting of the lymphatics, from the pressure of the child's head, and the retention of the lymph, in the lymphatic vessels and glands of the limb. Mr Brandon Trye supposed the disease to be seated in the lymphatic glands themselves, which are obstructed by the pressure of the uterus and its contents. Dr Hull, who wrote a very learned treatise upon this disease, which is well worthy of perusal, conceives that it "consists in an inflammatory affection, producing suddenly a considerable effusion of serum and coagulating lymph from the exhalants into the cellular membrane of the limb," (p. 204.) He considers, the pyrexia proves beyond all doubt the existence of a general inflammatory diathesis; the excruciating pain, tenderness, heat and swelling of the leg, equally evince the presence of topical inflammation; the seat of the disease he believes to be in the muscles, cellular membrane, and inferior surface of the cutis; and in some cases, perhaps, the inflammation may be communicated from these parts to the large blood-vessels, nerves, lymphatics, and glands. An attempt has been made to identify this disease with diffuse inflammation of the cellular membrane, but in the disease I am now describing, there are no marks of inflammation of the cellular substance, whether sub-cutaneous or intermuscular, or of the muscular fibre itself, and the external aspect of the affected part is very different. Dr D. D. Davis, Professor of Midwifery in the London University, to whose ingenuity operative midwifery stands much indebted, being dissatisfied with all the pathological opinions that had been laid before the profession, set about the investigation with a mind unfettered by any particular doctrine; and so determined was he to be guided by the appearances displayed on dissection, that he resolved to employ an anatomist, who was to be requested to draw up his own report. The first fatal case which occurred in Dr Davis's practice, was that of a poor woman in St Giles, in the year 1819, and Mr Laurence, one of the most distinguished anatomists and pathologists in Lon-

don, was requested to conduct the dissection. No distended lymphatics were observed, nor diseased lymphatic glands, but the crural vein was found diseased and thickened in its coats, and its cavity obliterated by an organized coagulum, and a matter which appeared like pus. Dr Davis made public the result of this case in his class-room, and it became the subject of discussion at the Medical Society of St Bartholomew's Hospital; and perhaps it is fortunate for Dr Davis's fame that that discussion took place, as very daring attempts have been subsequently made to deprive him of the merit which is so justly due to him. Subsequent to this period, Dr Davis and others have had several opportunities of examining fatal cases, and in every instance, as far as I am aware, either the crural or the iliac veins were found affected in the same manner *. After lecturing upon this subject in December 1824, the late Dr Dease, Surgeon to the Forces, who did me the honour of attending my class, told me that he had produced such a disease in the person of a serjeant of an Irish militia regiment, by tying the saphena vein to cure a varix. All the phenomena of *phlegmasia dolens* took place; the inflammation of the vein seemed to extend into the abdomen. The disease was subdued, however, after copious depletion, but the man had a narrow escape. It would also appear that the same circumstance has happened in the hands of that celebrated surgeon, Sir Astley Cooper, by tying the same vein. I have also heard of a case which occurred after amputation, in a male patient operated on in the Westminster Hospital; *phlegmasia dolens* took place in the other limb, and after death the disease was traced from the vein of the stump, which became inflamed soon after the operation. The disease ascended along the vessel, so as to affect the iliac portion of it; after reaching the bifurcation of the *vena cava*, the inflammation extended down the iliac vein on the opposite side, which was found thickened, and contained the same kind of plug observed in Dr Davis's cases.

In the present state of our knowledge, I am far from alleg-

* Vid. Vol. xii. part 2. Med. Chir. Trans. of London.

ing that inflammation of the veins is the only cause of this affection; but I conceive that no reasonable mind can reject Dr Davis's pathology.

Treatment.—It would appear that Puzos was among the first who recommended blood-letting in this disease, and Leveret followed his footsteps; but topical bleeding was not used until recommended by Mr Trye. If the pulse be strong, and the patient robust, it may be found advisable to take blood from the arm in considerable quantity; but should *phlegmasia dolens* come on after other acute disorders, leaving the patient much weakened, either by diseased action, or the remedies employed to reduce it, the lancet is inadmissible. We must then rely upon topical bleeding by leeches, purging, fomentations, and blisters; in all cases, large doses of calomel and opium are highly necessary. As soon as fulness, with pain increased on pressure, is observed in the inguinal region, we shall have reason to dread an attack of this disease, and therefore must be on our guard; and should there be the least appearance of its becoming worse or extending, ten, twenty, or thirty leeches should be applied over the part affected, and repeated, in increased numbers, again and again, if necessary. The great point to be attended to, is to arrest the disease before the swelling takes place in the extremity; in this way, I think, I have been able, during the last eight years, to check it several times in its first stage. If not called till the whole limb has become swollen, we must have recourse to the leeches in such numbers as the strength of the patient will admit. Antimony is to be used as a counter-stimulant: in all cases it is a powerful means of enabling us to save blood. I cannot agree with Dr Davis, respecting the administration of digitalis, when we have a more powerful and certain remedy in antimony. In the latter stages of the disease, blisters are to be applied, so as to occupy the lower part of the belly, as well as the upper part of the thigh of the patient. I have seen good effects, in one case, from the application of ice to the limb in the early stage of the disease, bu it might prove a dangerous remedy after the swelling has taken place.

During recovery, frictions and bandages will be found very beneficial.

With respect to the general treatment of inflammation of veins, it may be shortly stated, that it must be conducted upon the same principles as recommended in other severe inflammatory complaints. But I would strongly urge the free and early administration of calomel and opium.

CHAP. VIII.

PLETHORA, AND EXSANGUINITY.

I WISH to restrict the term plethora to express an undue quantity of blood in the system. Although it can scarcely be ranked as a disease, yet it deserves to be treated of in a course of the Principles and Practice of Physic, as being a powerful predisposing cause of many serious affections.

Where there is such a redundancy of blood in the system as to threaten mischief, the following symptoms will be observed;—an overpowering sense of heat and fulness, flushed face, oppression in the chest, and more or less difficulty in breathing, weight at the præcordia, a sense of uneasiness or fulness in the head; a full, strong pulse; occasional vertigo; a difficulty in keeping awake, particularly after a hearty meal; disturbed nights, from heat of surface and disagreeable dreams; an appearance of debility, which is not real, but which induces many people to take more food and more wine, even when the pulse is full and bounding. The bowels will be found to be out of order, and the tongue, in general, loaded. To a person so affected, the least accident, as a fright, or exposure to cold, or drinking a cold fluid, or eating any thing particularly indigestible, upsets the balance of the circulation, and simple apoplexy may be produced, or congestion of some other internal organ, which will

be very likely to terminate in inflammation; or the combination of symptoms denominated fever may be produced.

Causes.—In youth, generally speaking, the constitution is plethoric, the demand for blood being great to meet the wants of the system, to supply the means of growth, and the developement of the various organs and functions of the body. At the age of puberty the system is very active; and it is sometimes matter of wonder, how quickly the various parts of the body take on the appearance of manhood. The age of puberty, therefore, is well known, even to the vulgar, as being a critical period of life.

The plethora necessary to affect all these changes, subsequently becomes less and less requisite, and its continuance is the cause of many serious maladies, which are known to take place at this age, in the shape of fever, inflammation, and consumption. Indolence, and sedentary habits, are also causes of plethora.

Some people make blood very quickly indeed; feed them on the lowest diet, but give them liquids, and they will still be plethoric: but there are others, who feast upon the richest articles of food daily, and yet can never be said to be in that state.

Treatment.—It is fortunate for mankind, that diarrhœa so frequently takes place, and assists the constitution when struggling for her very existence; that profuse perspirations are so easily excited; and that the kidneys act occasionally so as to produce an increased flow of urine,—all of which circumstances tend in a remarkable manner to deplete the system. It will also be observed, that eruptions of various kinds appear on the face, back, breast, and shoulders, at the age of puberty, acting the part of good counter-irritants, to the relief of internal organs; these eruptions, which are generally of the tubercular kind, produce considerable local irritation. Sometimes I have seen urticaria appear very generally over the surface of the body, when the system was to all appearance in great jeopardy. Epistaxis is known to take

place frequently in plethoric subjects, and is often productive of the greatest benefit.

The buoyancy of spirits, so peculiar to young men, urges them to athletic and manly exercises, and does good, not only by strengthening the frame, but also by preventing plethora. In females, the menstrual discharge appears to operate in preventing a redundancy of blood.

These circumstances lead us at once to the proper plan of treatment, not only for the purpose of preventing plethora, but of reducing it when it does exist, and threatens danger. Blood-letting occasionally saves life; but it is very far from being necessary, in the majority of cases, unless some important organ is threatened with inflammation. At first, the bowels should be very freely acted upon, and subsequently kept regular, so that the patient shall have one or two free evacuations daily. Regular exercise; moderate indulgence at table, avoiding slops; early rising; and sleeping in a well-aired room, are all points of the greatest consequence.

EXSANGUINITY.

This disease is characterized by a deadly paleness over the surface of the body, particularly of the face and lips. The pulse is quick and feeble, easily excited, and there are frequently palpitations; the appetite is impaired and fastidious; the bowels are disordered; there is languor, general debility, and emaciation.

There is considerable approach to this affection in chlorosis; and it is sometimes produced by the actual loss of blood. This is an affection which has been noticed by the older writers, but we are not yet acquainted with the pathological condition of the body on which this bloodless state depends, when it is not occasioned by an actual loss of blood. I have seen the affection occur at all ages, and in individuals of apparently very different habits and occupations. The most unsophisticated example of exsanguinity on record, with which I am acquainted, is that related by Dr Combe of Leith, in the 1st vol. of the "Med. Chir. Trans. of Edinburgh."

This disease affected a considerable number of workmen,

who were employed in a coal mine at the village of Anzin, in the immediate vicinity of Valenciennes, in which neighbourhood I resided for upwards of two years, and had frequent opportunities of satisfying myself of the correctness of the statements, given in the 9th vol. of the "Journal de Medicine," by Professor Halle of Paris: but although the disease only attacked the men severely who were employed in a particular coal mine, yet I observed that a considerable number of others were pale and emaciated, and very few of the colliers looked strong and ruddy. The pit in which the epidemic occurred, was one hundred and twenty fathoms below ground, excavated in the same manner as the others, only from being longer, it admitted fresh air less readily; its temperature was 64°, and it exhaled an odour of sulphuretted hydrogen gas, and respiration in it is described to have been difficult. The workmen affirmed, that the water which filters across the mine, on touching their hands, or the naked parts of their bodies, produced blisters and boils. Nevertheless, they had the imprudence to use it for the purpose of allaying their thirst. A description of the symptoms was sent to the School of Medicine in Paris, by which it appears, that the disease commenced with violent colics, pains in the intestines and stomach, dyspnœa, palpitations, diminution of strength, distention of the abdomen, and stools of a black and green colour. The patients continued in this state for ten or twelve days, or more, when the abdominal pains ceased, but the pulse remained feeble and contracted; the skin lost its colour, and became of a yellow tinge; loco-motion was performed with difficulty, and accompanied by great fatigue; frequent palpitations caused an extremely painful state of anxiety; the face became swollen, and copious perspiration took place. This state is represented to have continued even for more than a year, attended by wasting and emaciation. At length, the original symptoms recurred with violent head-aches, frequent attacks of syncope, intolerance of light and sound, tympanitic distension, pain in the belly, and purulent stools; and death soon closed the scene.

When these details were transmitted to the Society of the School of Medicine in Paris, out of fifty attacked with it, three

had died, and none were perfectly cured; and, upon an earnest request on the part of the Society, four pitmen were sent to Paris, on purpose that the phenomena of the disease might be more carefully watched,—the treatment more efficiently directed,—and in case any of the patients died, that the appearances on dissection might be minutely recorded. Two of these men recovered perfectly, one imperfectly, and one died. The following appearances were found on dissection. "The abdomen contained no serous exudation. The intestines, and especially the colon, were very much distended; and the fat, both sub-cutaneous, and in the omentum and mesentery, was very yellow. The liver was small, and did not project beyond the ribs; it was soft and pliable in every part; it was of a pale yellow colour, both externally, and in its substance, which was soft and unctuous to the touch. The gall bladder was half full of bile, of a colour like the yolk of an egg; and when analysed, was found to contain much coagulable albumen. The spleen was small, and softer than ordinary; and the liquid which flowed from it, as it generally is, was red, like the dregs of red wine.

The stomach, when opened, was found half full of a liquid, coloured like the dregs of wine. The duodenum, and the jejunum, were lined with a mucus of a similar colour; and when that mucus was removed, the membrane, both in the stomach and intestines, in all their extent, appeared white and sound. The matter contained in the rectum was thick and figured, and of a greenish brown colour. All the other abdominal viscera were sound.

In the cavity of the thorax, the right lung adhered almost every where to the pleura, and especially on its anterior part, but the left lung was almost entirely free. In neither was there any remarkable quantity of serosity; both were light, decrepitated under the fingers, and there was no congestion. They were externally white, and mottled with dark blue spots; and on incision, a frothy yellowish serosity issued from all points of these substances, but not from any preternatural collection. The heart was of a very ordinary size, and its flesh as pale as that of muscles which have been washed and macerated. Its parietes were soft, and the columnæ carneæ

small. Its structure was not at all affected. Not a drop of red blood escaped from any of its cavities; but in the left ventricle, a coagulum as pale as the flesh of the heart itself, was observed, which contained no perceptible portion of colouring matter; the pericardium contained no serosity.

The brain was white, the cineritious substance pale, and little distinguished from the medullary substance. Two or three scruples of serosity only were found in the posterior part of the left ventricle, and the choroid plexus was very pale.

In the three cavities, all the vessels, both arteries and veins, were destitute of coloured blood, and contained only a small quantity of a serous liquid. No blood was found in the aorta, as far as its crural subdivisions, nor in the axillaries, as far as the brachial sub-division, nor in the accompanying veins, nor in the system of the hepatic vessels, nor in any of the sinuses of the brain. Upon making a deep incision into the flesh of the thighs, there flowed out a small quantity of liquid and black blood, but from no other part did any flow. The flesh of the muscles which cover the thorax, was exceedingly red; but that of the extremities not much so.

With respect to the appearances observed in Dr Combe's patient, it may briefly be stated, that they were similar.

Treatment.—Mercury has been tried, but the result does not afford much hope of its being pre-eminently useful; and, in some cases, it was decidedly injurious, by producing febrile excitement. The most favourite remedies, however, are stimulant and tonic medicines, with occasional opiates, when required to relieve the griping pains in the bowels, together with the employment of gentle laxatives. Professor Halle speaks highly of chalybeates. I have seen several children, who suffered much from the draining of blood after being leeched; but all of them recovered under light nourishing food, asses' milk, and a small quantity of brandy three or four times a-day, together with warm clothing; the patients being kept as much as possible in the open air.

CHAP. IX.

CYANOSIS OR BLUE SKIN.

THIS affection is also known by the term "*Morbus Cæruleus.*"

Symptoms.—Discolouration of the skin, which is sometimes blue; at others, livid or violet; the whole surface is in this state, even that of the mucous membrane lining the mouth. There is cough, palpitation, sometimes syncope. In some cases dyspnœa is a constant attendant, which is increased by exercise, a loaded stomach, constipation and mental emotions, together with the application of cold and damp.

Pathological Opinions.—This disease is usually attributed to a communication between the right and left side of the heart, or to some other malformation of that organ, by which means a considerable portion of venous blood is circulated in the arteries, without having previously passed through the lungs. The passage of blood from the right side of the heart to the left, may take place in consequence of the *foramen ovale*, or *ductus arteriosus*, continuing pervious after birth, or by an artificial opening between the right and left ventricle.

Dr Gintrac, Professor of Anatomy and Physiology in the School of Medicine at Bordeaux, published a work on this

subject in 1824 *, and he has collected the results of fifty-three dissections, of which the following is an abstract.

22 times the aorta was found to arise from both ventricles.
33 — the *foramen ovale* was open.
14 — the *ductus arteriosus* was open.
4 — a single heart, of one auricle and ventricle.
5 — the ventricular septum was imperfect.
22 — the pulmonary artery was contracted.
5 — the pulmonary artery was obliterated.
1 — the aorta was obliterated.
4 — the aorta was seen rising from the right ventricle, the pulmonary artery from the left.

The above table is very interesting in many respects: it proves that the disease upon which the colour of the skin depends, is generally congenital, when it either very soon proves fatal, or perhaps not till the child suffers from teething, or begins to walk alone. But, as Bertin remarks, many of these lesions have existed without the appearance of this affection of the skin. It is also well known that it has been produced by the action of the nitrate of silver. I have seen two cases in which the disease followed the exhibition of this remedy; and in both it was prescribed by the late Dr Baillie for the cure of epilepsy, and in neither of the subjects were there any symptoms of an organic affection of the heart. It is probable that in such cases the nitrate of silver produces a change either in the condition of the blood, or in that tissue which gives the colour to the surface of the negro. Bertin supposes that the disease depends upon a retardation of the blood in the whole venous system, and not upon the admixture of black and red blood, as has been alleged by others.

Treatment.—Should the disease depend upon any of the malformations of the heart, already noticed, it is not to be supposed that any remedy will cure it; but something may be

* Observations et Recherches sur la Cyanose, ou Maladie Bleue.

done to mitigate violent symptoms, and prolong life, by avoiding exercise, as well as every other circumstance which can tend to hurry the circulation, and quicken respiration. In the two cases already quoted, in which the discolouration of the skin was produced by the action of the nitrate of silver, every possible remedy was had recourse to, first by Dr Baillie, and afterwards by myself, without success.

END OF VOLUME FIRST.

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